43rd Annual

Trenton Computer Festival

The Oldest Personal Computer Show in the World

The College of New Jersey

Ewing, New Jersey

2018 PROGRAM BOOK

Education Building
Talks, Forums, Vendor Fair & Flea Market
Saturday, March 17 - 9:00 am to 5:00 pm
Talks/Forums start at 10:15 am
Sarnoff Museum Tours - 1:00 pm to 3:00 pm

<<<<< TCF Banquet 6:00pm >>>>>
Speaker: Nick van Terheyden
A leader in Digital Healthcare Innovation
Brower Student Center Room 225E
$32 - Tickets Maybe at Available at Registration Table

Sponsored by: The College of New Jersey (TCNJ) Electrical/Computer Engineering Department – www.tcnj.edu/~engsci/
With the support of
IEEE Princeton/Central Jersey Section (PCJS) – ewh.ieee.org/rl/princeton-centraljersey
ACM/IEEE-CS – Joint Princeton/Chapters of ACM and IEEE Computer Society – princetonacm.acm.org
NYACC – New York Amateur Computer Club – www.nyacc.org
ACGNJ - Amateur Computer Group of New Jersey - www.acgnj.org
Member of the New Jersey Makers Day Partnership

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Special Exhibits & Demos

ED Building - First and Second Floor Lobbies: Demos and Poster Presentations on Robotics, Advanced Technology, Vintage Computers, Digital Photos & Club/Professional Exhibits

RWH 2nd Floor: Sarnoff Museum

WiFi SSID: Guest-at-TCNJ3 login guest2193, password uhubeve7

TCF Keynote Speaker
Nick van Terheyden

former Chief Medical Officer for Dell
Healthcare Innovation Incremental and Exponential
3:40 pm in Room ED-115

Twitter: #tcf & #tcf2018; Facebook: @TCFfestival

Get a Ham Radio License in One Day!

Sponsored by the David Sarnoff Radio Club <www.n2re.org>

If you wanted to get an amateur radio license but never had the time, now is your opportunity! The FCC has changed the rules so that no Morse Code proficiency is required. To obtain the entry-level Technician license, all one has to do is pass a multiple-choice exam. With a Technician Class License, one may participate in Amateur Radio and enjoy privileges for operation on some of the HF amateur bands, use of VHF&UHF repeaters, participation in local Amateur Radio Emergency Services (ARES), the annual American Radio Relay League (ARRL) Field Day, and many other activities. We will be holding **"HAMCRAM 101"in ED-103** from 9:00 am thru about 1:30 or 2 pm. We will have a short morning break, as well as a break for lunch. Following the HAMCRAM, we will run through a few practice exams and Q&A in preparation for the testing session, which will begin at 3:30 PM. The course will provide participants with an overview of the requirements needed to pass the FCC Technician License exam. At 3:30 pm the examination will be given by ARRL-certified Volunteer Examiners (VEs). One does not have to attend the HAM CRAM 101 or pay for admission to TCF to attend the exam session. An exam fee ($15.00) must be paid by each examinee. Two forms of identification (at least one must have your photograph) will be required to take the exam. All license exams will be offered (Tech, General and Extra). Test results will be provided after the exam session is over. The slides and material for the ham cram can be found at: https://drive.google.com/file/d/0B8Kvsw95jCqIeFZrU3E0R1k2TFU/view?usp=sharing. A wonderful free study guide can be found at http://www.kb6nu.com/tech-manual/. Online practice exams are of great benefit, http://qrz.com/hamtest/.

********* 10:15 am to 11:10 am **********

ED-115: Future of Medical Device Development, Bill Acevedo, MedLogiq.

Abstract: In this presentation we will discuss the future of medical device development and how it's being driven by a technological evolution taking place across the healthcare industry. Significant changes in the way devices are developed, approved, manufactured and monitored are taking place. Fortunately, these changes are not unique; in fact many have already taken place in other industries decades ago. These provide a great deal of experience and value from the development they've done and the lessons learned.

Bio: Bill Acevedo is the Chief Executive Officer for MedLogiq, a company specializing in procuring advanced technologies from other industries to adapting them to improve healthcare. His primary responsibilities are conducting needs assessments with regulators and industry leaders and identifying existing systems and technologies that effectively resolve their issues with reliable, scalable solutions. This strategy provides tremendous time-to-market and cost savings advantages while simultaneously improving the delivery of care.

ED-211: mTrigger: Biofeed-Back to the Future, Amy Lalime, mTrigger, LLC.

Abstract: "Why hasn't someone done this already?" Often, the answer is that they have. But innovators adapt; innovators modernize; innovators try again. Three years ago, a renowned physical therapist asked himself this very question about creating a mobile platform for exercise-based biofeedback. Today, the mTrigger Biofeedback System is selling to physical therapy and athletic training clinics nationwide. Hear the story of mTrigger's beginning, road to commercialization, and plans for future development in this talk about turning an idea into a tangible rehabilitation solution.

Bio: Amy Lalime graduated from University of Delaware in 2015 with an Honors BS in Marketing and minors in cognitive science, psychology, and advertising. She first began working as the business lead on the mTrigger team during her senior year, and upon graduating was offered the opportunity to run the day-to-day activities of mTrigger, LLC. She accepted a full time position as Product & Marketing Manager and oversaw the commercialization and launch of the mTrigger Biofeedback System over the past 3 years. Today, she continues to work closely with mTrigger's co-founders and development partners to guide the business forward. Amy recently moved to Philadelphia and loves to explore the city's many experiences as well as hike with her dog, attend yoga classes, and cook.

ED-209: Wordpress Bootcamp. Louis Judice, The Round Mountain Group.

Abstract: : Learn the beginning to end steps to create a blog or website using Wordpress - the Internet's #1 publishing platform. Learn about hosting options, themes and plug-ins. Bring a laptop and follow along and build a website from scratch. Learn to avoid common pitfalls and maintain good security practices. Whether you are building a blog - or just assigned to support your company's Wordpress site, you will find this workshop worthwhile!

Bio: Louis Judice (Founder, The Round Mountain Group; and formerly with HP, DEC and RCA Labs). Louis has built hundreds of Wordpress sites and his company currently manages the web presence for dozens of clients in industry and government.

ED-208: Advanced Medical Sensor Intellectual Property (IP) Research and Discovery, Joseph Jesson, RFSigint and TCNJ.

Abstract: Joe Jesson will present research techniques on searching and classifying the latest inventions and prior-art of specific medical sensor technology. He will demonstrate how patents can be displayed as a visual landscape with the IEEE's new and remarkable innovative search and classification tool, InnovationQ Plus, and how to access world-wide patent databases with IEEE Xplore (the IEEE's massive online technical databases). Joe will demonstrate how both large and small firms can investigate non-invasive wireless sensor technology. He will use Cortisol (an indicator of stress) as an example of how life-style changes can modulate its level in our system; and then search Cortisol sensor technology to discover the latest developments!

Bio: Joseph Jesson has more than 25 years working with embedded wireless systems, Telemetry, Telematics, M2M, and the Internet of things (IoT). Joe is currently CEO of RFSigint, a wireless and IoT patent subject matter expert, and has held the Chief Technology Officer (CTO) position at General Electric, where he was awarded the GE Edison Award in 2007, Able Devices, and Assurenet Inc. He has also had IT Architecture positions at Amoco and BP, and staff engineering positions at Motorola and The University of Chicago. Joe has a MS degree from DePaul University and is currently working on his PhD at NJCU. He is also the Chair of the PCJS IEEE Life Group.

ED-207: Research and Development on Artificial Intelligence for Engineering and General Intelligence, Adam Schwartz, Consultant.

Abstract: Adam Schwartz will talk about his R&D on a high functioning AI that is not a trade secret: from its capabilities, to how it will be used in the future, to the milestones before launch and how it can be used. Learn the difference between high functioning AI and the loosely defined term that's used today. It also covers issues with properties of problem solving systems from the top down and how going the other way can create inefficiencies and confusion. Learn why differences in the type and class of AI are *big deals* for their meaning. While he cannot go into proprietary details, he will discuss some of the technical details and others in a highly accessible general interest way.

Bio: Adam Schwartz is actively involved in AI research. He has a BA from Lehigh University in Science Technology & Society and an MS in Computer Science from Montclair State University.

ED-206: Getting Started With PCs, Pads and Tablets, Including the Internet and Digital Photography, Herman Hinitz, H. Hinitz Photography.

Abstract: This session is designed for the beginners, people who would like to use a personal computer, pad or tablet, smartphone, digital camera, notebook, etc., for word processing, electronic spreadsheets, graphics, Internet portals (browsers), databases, antivirus programs, firewall programs, digital photography, etc., but are unsure of how or where to begin. Appropriate examples will be used with applications such as MS Office. Also, after this session, see the Fine Art Digital Photography Display in the building lobby area for correlated information and examples.

Bio: Herman Hinitz has used diversified software and hardware in research, consulting, publications, and digital photography. Some of his work has been included in commercially available books, professional publications, fine art collections, photography exhibitions, Internet sites, and gift shops. He is a long time TCF supporter.

ED-113: Agricultural Robotics – An Overview and Case Study of a Unmanned Robotic Coconut Tree Climber and Harvester. Rajesh Kannan Megalingam, Amrita Vishwa Vidyapeetham University.

Abstract: Machines are used in agriculture to carry out tasks such as sowing, weeding, harvesting and spraying. Robotics are now being used for the automation agricultural tasks. Coconut production is one of these applications. Coconut palm growers are struggling with an acute shortage of human tree climbers. In this talk the problems associated with this shortage are analyzed. The details of various mechanical models and how robotics could be a solution are discussed. A case study of a novel unmanned robotic coconut tree climber built at HuT Labs is presented, which includes an introduction to agricultural robotics, associated problems with coconut tree climbing and existing solutions.

Bio: Rajesh Kannan Megalingam is an electronics engineer, leading research on humanitarian technologies with special emphasis on Robotics at HuT (Humanitarian Technology) Labs, and a Prof. of ECE at Amrita Vishwa Vidyapeetham University, where he completed his MS and PhD in 2010 and 2015 respectively. His undergraduate Engineering degree is from Anna University in 1997. His research areas include Embedded Systems, Robotics, Semiconductors, and Healthcare; and focus on autonomous robots, vertical climbing robots and robots for rehabilitation. He has seven and half years of industry experience as a VLSI Design and Verification Engineer, and more than 11 years of research experience. He worked for STMicro Electronics and Insilicon. He has published more than 80 papers, several book chapters, and has four patents. His awards include the two for Excellences from Amrita University and the Outstanding Branch Counselor Award from the both the IEEE worldwide and Kerala section.

ED-110: Introduction to HTML5, David Soll, Omicron Consulting, LLC.

Abstract: David Soll will discuss HTML5 and CSS 3 as well as Javascript (along with jquery and NodeJS) as they are the key components to the responsive styles being employed to provide readability on multiple device types. His talk is NOT going to be on how to use it or anything too technically deep. Instead, it's going to be an introduction to what it is and why it's important.

Bio: David Soll is the CTO and President of Omicron Development, LLC. He is responsible for the overall technical direction and technology solution set provided by Omicron. David received a BS in Electrical Engineering from Drexel University and has been working in Information Technology for over 25 years, more than 20 of them with Omicron. He is currently the Chair of the Princeton Central Jersey chapter of the IEEE Computer Society and is a senior member of the IEEE. David is also the past Chairman and current board member of the Princeton chapter of the ACM and a senior member of the ACM.

David has a long history of innovation working with Microsoft. He has worked with virtually every version of operating system that Microsoft has produced and has given many presentations on them. He received a prestigious IEEE Region 1 Award from technical contributions to information technology. He also is the founder and current chairman of the IEEE/ACM Information Technology Professional Conference held in conjunction with TCF.

ED-109: Quantum Computing with the Q# Programming Language, Barry Burd, Drew University.
Abstract: This Quantum Computing talk is meant to be for people with only a bit of programming background.
Bio: Barry Burd is a professor of Mathematics and Computer Science at Drew University in Madison, NJ. He is the author of several articles and books, including *Java For Dummies*, *Android Application Development All-in-One For Dummies*, and *Java Programming for Android Developers For Dummies*, all from Wiley Publishing. He received an M.S. degree in Computer Science at Rutgers University and a Ph.D. in Mathematics at the University of Illinois.

ED-107: Hands on Arduino Workshop for beginners, Katalin Frolio, Linearizer Technology.
Abstract: The main goal of the workshop is to introduce participants to electronic devices and basic circuit theory. The Arduino is an affordable, flexible, open source microcontroller platform using a simplified C programming language, and it is designed to make it easy for hobbyists to create homemade projects. Participants are expected to bring a PC, and in order to save some time, they are also encouraged to download the Arduino software ahead of time. Step by step instruction can be found at the website: https://www.arduino.cc/en/Main/Software. Things to Bring: A laptop computer with a USB port. Background Required: Basic algebra for solving simple equations. Intended Audience: Anybody who is interested in electronics is welcomed.
Bio: Katalin Frolio graduated with a BS in Electrical Engineering from TCNJ and currently works as an Electrical Engineer at Linearizer Technology, Inc. She is the chair of the IEEE Young Professionals Princeton/Central Jersey Section. She is also a graduate Electrical Engineering student concentrating in High Frequency Systems at Villanova University.

ED-105: Introduction to Object-Oriented Programming and Design Principles, Michael Redlich, ACGNJ.
Abstract: Object-Oriented Programming (OOP) is a programming paradigm that models real-world objects. The most well-known and widely-used OOP languages are C++ and Java, but some languages, such as Simula-67, were around much earlier. The advantages of OOP over structured programming include modularity and code re-use. As OOP has evolved over the years, things like design patterns and design principles have guided developers to write applications that are more adaptable to modification. This seminar will introduce OOP, its basic attributes (encapsulation, abstraction, inheritance, and polymorphism), the class mechanism, and some design principles that have led to the development of design patterns. Example Java source code will be reviewed to demonstrate the features of OOP and design principles.
Bio: Michael Redlich is a Senior Research Technician at ExxonMobil Research and Engineering in Clinton, NJ, and a Java Queue news editor at InfoQ (views are his own). He has been a member of ACGNJ since 1996, currently serves on the Board of Directors as President, and has been facilitating the ACGNJ Java Users Group since 2001.

ED-204: Lockpick Village, TOOOL NJ.
Abstract: This workshop discusses how to pick locks and is repeated at approximately half hour intervals.
Bio: The mission of the Open Organization Of Lockpickers is to advance the general public knowledge about locks and lockpicking. By examining locks, safes, and other such hardware and by publicly discussing our findings, we hope to strip away the mystery with which so many of these products are imbued. The more that people know about lock technology, the better they are capable of understanding how and where certain weaknesses are present. This makes them well-equipped to participate in *sportpicking* endeavors and also helps them simply be better consumers in the marketplace, making decisions based on sound fact and research.

***********11:20 am to 12:15 pm***********

ED-115: Medical Tricorders - Taking Science Fiction into Reality, George Harris, Basil Leaf Technologies.
Abstract: What if we could make a real Tricorder™, like the one Dr. McCoy had in Star Trek™? How would this impact individuals' lives and the world? Do we have the capabilities to achieve this goal 250 years earlier than when Gene Rodenberry predicted? XPRIZE and the Qualcomm Foundation dared to ask this question and after 4 years of work, Final Frontier Medical Devices from Basil Leaf Technologies was able to bring its vision into reality. This talk will discuss our Tricorder™ and what to expect in the near future.
Bio: George Harris, is the cofounder of Basil Leaf Technologies. He is the lead programmer/developer of the medical sensors for Basil Leaf Technologies XPRIZE winning Tricorder. George was critical in building the Tricorder and is now leading the effort to refine the various technologies and obtaining FDA approval.

ED-211: Developing an IoT Strategy for your Company - Where to Start? Ziaul Mannan, Yale New Haven Health System (YNHHS).
Abstract: Are you ready to build a vibrant IoT strategy for your company? In this session we'll cover some tips and tricks, to make sure you really get this right. Clearly the Internet has undergone an enormous transformation, from being technology driven to being market and opportunity driven. So the decoupling of underlying connectivity technologies from the wonderful applications able to run on top of it have been a painful but really instrumental shift in unlocking what is now often referred as the digital or the third and fourth industrial revolution. Indeed, what is urgently needed here is this transformation. Starting a comprehensive IoT strategy for your company could be a great start!
Bio: Ziaul H. Mannan is currently the Database Architect for YNHHS, based in New Haven CT. As a database specialist with over 20 years of experience, Zia enjoys designing and architecting systems in fast paced 24x7 environments. As database architect he oversaw development of critical clinical systems at Yale School of Medicine, YNHHS and Yale Medical. He continues to be involved in projects centered around clinical innovation and breakthroughs. Clearly with emersion of big data, lot of his projects these days are around IoT, data analytics, data warehousing and data interchange. Zia got involved in charity work early in his life through Leo Clubs. Zia is a dedicated activist for child rights and sight around the globe. He is actively involved in charities that aim to provide quality education and healthcare to underprivileged children. Being an avid fan of science, he sits on the board for a foundation in Connecticut that promotes the study of STEM among high school students. He is the fair director for the second largest STEM fair in CT. Zia is a frequent speaker in technical and not-for-profit forums, and guest lecturer at area universities.

ED-209: Workshop on Wordpress, Continued

ED-208: Self-Publishing Your Book in the Digital Age, Scott Marshall, author.
Abstract: From concept to manuscript to book manufacture to marketing and distribution -- how to make the book you've dreamt into a reality without having to deal with a publisher. Self-publishing is easier and less costly than ever thanks to digital word processing and typesetting applications, web-based self-publishing services, print preparation tools, printing and distribution services. I'll share with you all the steps and online experiences in the process with my recent self-published book, "Love, Explained" as an example. Topics covered include the elements and parameters of a book, metadata in submission to web-based printers and distributors, copyright and ISBN, how "print on demand" (POD) works to eliminate the inventory and warehousing pitfalls of mass-printed books, and getting your book on Amazon and in libraries and bookstores.
Bio: Scott Marshall is a retired software engineer and video game designer on his third act in life cracking difficult historical, psychological, and philosophical puzzles and publishing his findings. His past talks at the Trenton Computer Festival included widescreen movie history, the art and history of the theremin, selling on ebay, and an assessment of the history and possible future for intelligent and conscious computing machines.

ED-207: **The Theremin and Technological Joy, Kip Rosser, artist.**
Abstract: **Abstract:** The theremin was one of the very first creations of the dawn of the technological age at the beginning of the 20th century. As such, it presaged the coming of all subsequent electronic instruments as well as working on principles of physics that resulted in the creation of all manner of marvels, from automatic opening doors to what was arguably the most notorious spying device ever invented: the first passive surveillance bug, invented by Leon Theremin himself. The unstoppable rising tide of technology permeates every aspect of our lives from recreational to military/industrial to medical and more. Through musical demonstration as well as stories that cover history, physics, and the neurological components of emotions such as joy and wonder, this talk humorously (and sometimes, cautiously) examines our human fascination with creating, innovating and possessing technological gadgetry.

Bio: Kip Rosser's solo performances, staged productions, award-winning compositions have earned him a reputation as one of the most accomplished thereminists in the world. In 1996, Kip crossed paths with the grandfather of electronic instruments. He purchased a kit and built his first Theremin. Rosser typically moves beyond a standard recital format, making for a unique event that combines music (ranging from classical to jazz to popular) with humor, stories, performance art, animation and video, continually pushing the boundaries of what the theremin can play and do. His full-length production, *Unholy Secrets of the Theremin* in 2003 received overwhelming critical acclaim. Gradually, he began to find ways to be of service by reaching out to people with a new type of life-and-music-affirming message. In 2006, after creating full courseware for using the theremin in a therapeutic environment, Rosser was chosen by Moog Music, Inc. to represent their theremins at the annual convention for the American Music Therapy Association. In 2007, he became a member of Music Under NY and continues to bring theremin music to the public in the NYC subway. In 2009, he was accepted on the artist roster of Musicopia, an organization that sends teaching artists throughout the Philadelphia area school system. Rosser brings his grade-appropriate music programs and workshops to students of all ages. In addition, for the past three years, he collects and delivers donated free musical instruments that are given to children as part of *Musicopia's Gift of Music* program. Rosser also created *The Complete Theremin*, the most comprehensive courseware currently available for theremin instruction, free of charge online at www.kiprosser.com. Recently, he composed and recorded theremin tracks for new works by Sebastian Yumatle of Argentina and Jassem Darkvain of Kuwait. His original music was used for Sabina Ptasnik's short film, *Gravity*. In 2014 he provided the theremin tracks by composer Dane Walker for the Toddy Burton film, *Scientists in the Woods*. In 2016, he composed the original theremin soundtrack for Jason Allen's feature film, An Idle Mind is the Devil's Playground. Rosser's latest CD of original ambient compositions for theremin, *Lessons from Vinegar Mother*, was released in 2016. He is currently working on another album of original compositions.

ED-206: **Best Websites and Web Secretes 2018, Eva Kaplan, Consultant in Computer Education.**
Abstract: TCF's Best Websites/Search Engines Guru will expand her talk to include specifics of The Dark Web, The Deep Web, The Invisible Web, and Apps and Virtual Private Networks that prevent tracking your computer messaging, social media activity, online purchasing preferences and more! And what goals underlie robotic hacking! What about Internet regulations?
Bio: This past year, Eva was inducted into her college's "Hall of Fame" as a "Pioneer in Computer Education." Her Computers and Kids summer camp, which ran from 1982 to 2013, received innumerable media recognitions and professional accolades. Her educational approach preceded STEAM - combining science, technology engineering, arts, and mathematics! The arts element came naturally as Eva is an exhibiting artist, art teacher, and pursued music studies extensively at The Third Street Music Settlement, privately, as well as having John Cage as a mentor. Eva has been a speaker for TCF since its inception in 1976.

ED-113: Robotics' Pavilion – An Introduction, Seung-yun Kim, TCNJ.
Abstract: A variety of robots will be demonstrated at the new TCF Robotics' Pavilion (ED-205). Robotics is an emerging multi-disciplinary area in Science, Technology, Engineering, and Mathematics (STEM) that combines mechanical, electrical and computer engineering in the design and construction of robots to perform specific tasks. It requires a working knowledge of electronics, software, and mechanics. Before the coining of the term robotics, there was interest in ideas similar to robotics, namely automata and androids, dating as far back as 400 BC. Robots are used in industrial, military, exploration, home, academic, and research applications. Although the appearance and capabilities of robots vary vastly, all robots share the features of electronic sensors, and a movable structure under some form of autonomous electronics, computer, and software control. This presentation introduces the element of robotics with examples of uses and future trends. It is further enhanced through many multimedia based examples of the state of the art and further directions of research, and the demonstrations of real robots at the Robotics' Pavilion.
Bio: Seung-yun Kim is an Assistant Professor in the Department of Electrical and Computer Engineering, and First Year Program Coordinator for the School of Engineering at TCNJ. Seung-yun earned a PhD and MS degrees in electrical engineering at the University of Dayton and a BS degree in electrical engineering at Saint Louis University. His research interests include collaborative computing, human-centered systems, mobile and ubiquitous computing, and intelligent robotics. He has been awarded over $300,000 in grants. He has published over 20 refereed journals and proceedings papers, and serves as a reviewer for the NSF and several technical journals. He has extensive experience in outreach to K-12 programs, and in promoting STEM education.

ED-110: Stock Market Timing Using Neural Networks and Genetic Algorithms – Latest Developments, Donn Fishbein, Nquant.com.
Abstract: Timing financial markets is essential in order to maintain a consistent rate of return. Buy and hold strategies work well only when the markets are heading north. Market downturns can be rapid and severe, and take years to recover from. This talk will address 1) the use of technical analysis in timing financial markets, 2) introduce artificial neural networks and genetic algorithms, and their application to technical analysis, 3) a practical system for timing the markets using these tools, and 4) the importance of testing and validation of trading systems, especially those whose inner workings may not be apparent.
Bio: Donn Fishbein, MD, PhD, is a physician and scientist who has investigated and traded the financial markets for > 25 years. His particular area of interest is mathematical systems with biological roots. For the past fifteen years, his focus has been on hybrid artificial neural network and genetic algorithm systems, both for end-of-day trading and more recently for day trading systems. He has lectured on these subjects, describing profitable systems for trading equities, exchange traded funds, and index futures. He contributes trading signals to a neural net trading website and offers consulting services and private development of trading systems based on these technologies.

ED-109: Developing Apps for I-phones (Part 1), Barry Burd, Drew Univ.
Abstract: In this session, I'll show you how to get started creating apps. In this first 50 minutes I will focus on the I-phone.
Bio: Same as in this room one hour earlier.

ED-107: Arduino Workshop, Continued.

ED-105: Getting Started with Java**, Michael Redlich, Amateur Computer Group of New Jersey**.
Abstract: Java is an object-oriented programming (OOP) language created by James Gosling at Sun Microsystems that was first introduced to developers in 1995. It is one of the most popular programming languages for client/server web applications and there are many scripting languages (Clojure, Groovy) that seamlessly interact with Java. Much of Java's language syntax was derived from the C++, but as James Gosling once stated, "Java is C++ without guns, knives, and clubs." This presentation will introduce the Java programming language, provide a brief overview, how to get started, review some Java keywords, introduce the Java class mechanism, and review a small, working Java application. Since knowledge of OOP is vital in the development of robust applications, the OOP paradigm will also be introduced along with a brief discussion of the advantages of OOP over structured programming. An example of a Java application will be used to demonstrate how the attributes of OOP are utilized within Java classes.
Bio: Same as one hour earlier in this same room.

ED-204: Lockpick Village, Continued.

***********12:25 pm to 1:20 pm***********

ED-115: Q&A on Wearable Technology Development, Bill Wong, Electronics Design Magazine.
Abstract: Bill Wong recently visited the CES as Senior Technology Editor of Electronic Design Magazine. He will share his experiences and answer questions on what is happening with wearable technology based on his CES visit.
Bio: William Wong is Technology Editor for Electronic Design with Penton's Design, Engineering and Sourcing group. He has worked on hardware and software projects for more than 40 years and has a BEE from Georgia Institute of Technology and an MS in Computer Science from Rutgers University.

ED-211: Getting Hit by an 18-Wheeler: Privacy & Anonymity in the Modern Age, Cody Hofstetter, IT/Cybersecurity Specialist.
Abstract: With ever increasing levels of powerful Nation-state and corporate surveillance becoming commonplace, how much privacy does an individual have left? Do privacy and anonymity still exist at all? In this talk, we'll cover a brief overview of current tracking methodology followed by useful tools and techniques you can begin using immediately. We'll touch upon proxy chains, VPNs, encrypted DNS queries, setting up your own DNS nameservers, TOR, local CDN redirection, and more. If you think encryption is hard, we'll also cover how to get you started using encrypted containers with Veracrypt in under five minutes.

Bio: Cody Hofstetter is the Founder and CEO of an IT/Cybersecurity firm specializing in vulnerability assessments, penetration testing, forensic investigation, and advanced data recovery/destruction. He is chairman of a non-profit that advocates Free and Open Source Software adoption to assist businesses and non-profits in utilizing FOSS to reduce their base operating expenses so they may allocate their limited resources elsewhere. Cody's background is originally in finance and has been forming and buying companies since the age of 19. He currently divides his time between four main ventures: his IT/Cybersecurity firm, the FOSS non-profit, board Treasurer for the only known working steamboat on the East Coast dedicated to watershed/ environmental education, and his latest business acquisition, a health-oriented and local community focused restaurant.

ED-209: Introduction to Switch Mode Power Supplies, Manuel Blanco, ITW.

Abstract: All electronic devices require a power supply. The electronics industry is consistently evolving to make these devices more miniaturized, efficient and customizable. The power engines that drive them are also becoming more integrated and embedded in virtually all applications. This presentation will explore and introduce the fundamentals of switch mode power supply design and its variant topologies through the historical developments of this technology.

Bio: Manuel C. Blanco is a Sr. Electrical Design Engineer at ITW where he develops and directs new strategic product designs initiatives, and market design requests that directly impacts his company's portfolio. He has a B.S. in Physics from Seton Hall University, and both a B.S. and M.S. in Electrical Engineering from New Jersey Institute of Technology. He is a senior member of the IEEE and active in its Power Electronics and Industrial Electronics societies.

ED-208: Internet Job$$$, Donald Hsu, Dominican College.

Abstract: Amazon, Expedia, Google, Linkedin, NetFlix, Priceline stocks are up. Yes, the economy is booming. Retires are working! Eighty percent of people have jobs from the Internet. Accounting needs 2.1 million by 2019 (Forensics, QuickBooks, PeachTree, MS Dynamics); application developers (C++, Java, C#) - thousands of jobs, but no applicants; cloud computing (Amazon, AWS, Dropbox, IBM, Microsoft Azure, Salesforce, VMWare); Big Data (MS Sql server, MongoDB, Oracle 11g, SAP, Data Warehouse), starting at $85,000; networking (Cisco, Info Security, A+, Network+, CIEE, CISSP); systems (Unix, Linux, Window 10); Analytics (IBM RSA, IBM SPSS, SAS, Hadoop), Social Media Manager (FaceBook, Twitter, Pinterest, Snapchat), Business Intelligence (Project/Product Manager, Global Finance, Sales/Marketing of Tech Product/Services). Computer majors are down 50 to 70% in US universities. This means more jobs for you and me. Bring a resume and get a free critique from the speaker.

Bio: Donald Hsu, PhD is a professor at Dominican College and President of the Chinese American Scholars Association (CASA). He has trained/taught 70 subjects, Accounting to Unix to 12,000+. Clients/students work at Amazon, AT&T, Bank America, Ford, Goldman Sachs, IBM, JPMChase, Mercedes Benz, Microsoft, Morgan Stanley, New York Presbyterian, Oracle, Siemens, Sony, Toyota, UPS, and Verizon and other Fortune 100 firms. CASA ran 23 successful E-Leader conferences in Asia and Europe, http://www.g-casa.com. He traveled to 86 countries, Africa, Asia, and Europe for international business. Don's profile with 7,100+ partners/clients is on Linkedin, https://www.linkedin.com/in/dohsu.

ED-207: The Space Shuttle Computer Systems, Frank O'Brien, Info Age.

Abstract: Flying the Space Shuttle, from launch until landing, is totally dependent on a complex of computers that interact with every major system onboard. Most importantly, the required level of reliability demanded sophisticated redundancy schemes that had never been implemented before. In this talk, we will discuss the hardware, software, redundancy management and the user interface of the Shuttle computer systems.

Bio: Frank O'Brien has been involved with NASA for 25 years, most recently as a Solar System Ambassador. His book on the Apollo Guidance Computer has been well received, and he is currently working on a book giving an engineering review of the Apollo Spacecraft. As a volunteer at the Infoage Science/History Center in Wall, NJ, he has a monthly lecture series on a wide variety of space topics

ED-206: Do It Yourself: Home Automation Demo, and Discussion, Neil Cherry, Tech Mahindra.

Abstract: What if you could build your own devices? In this talk Neil Cherry will demonstrate and then discussion automation with Raspberry Pi, ESP8266, ESP32, Arduinos and Sensors. We all find ourselves wanting that particular device to do that one task. With the software and hardware technology available today you can build all sorts of interesting devices and services that can leverage the real and virtual devices. Neil will introduce to you what's available in hardware and software.

Bio: Neil Cherry is a Quality Assurance Engineer with Tech Mahindra, has an AAS in Electronics and a BS in Computer Science and Information Systems, and is the author of "Wiley's Linux Smart Homes For Dummies". He has been working with computers, computer electronics, and software since 1978; has been playing with X10 since 1982; and began automating his home in 1992 when a friend gave him an X10 computer interface. Neil started the Linux Home Automation web site.

ED-113: Seeing in Pixels: Practical Applications for Neural Networks, Warren Seto, Brandon Siebert and Skyler Maxwell, TCNJ students.

Abstract: From smartphones to self driving cars, neural networks have become a key technology for implementing new features into modern devices. Today, we will talk about the current status of neural networks with a practical point of view. The team will also present the neural network and machine learning research done within the Intelligent Media Processing Laboratory group at The College of New Jersey. Whether you are a novice or an expert, this talk will introduce the concepts of neural networks and expose you to machine learning tools that can be used to create your own interesting applications.

Bios: Brandon Siebert is an undergraduate Computer Engineering student currently attending TCNJ. Brandon obtained his Associates in Engineering at Brookdale Community College before continuing his education in Computer Engineering. He assists with research into Machine Learning and Neural Networks. He worked with the research and development team at Dodge Data and Analytics. Warren Seto is a senior undergraduate Computer Engineering student at TCNJ. His interests include low level systems programming and working with embedded and IOT devices. He is currently working on Machine Learning projects related to image recognition/segmentation and deployment on various platforms. After graduation, he will be joining Apple Inc. as a Human Interface Device Engineer working on the User Experiences Team. Skyler Maxwell is a junior Computer Engineering student at TCNJ. His research interests include image and video processing, and deep convolutional neural networks. He is a student researcher working on convolutional neural networks, machine learning and computer vision. He held a summer internship at the US Air Force Research Laboratory, Rome, NY in 2017. All three presenters work at the TCNJ Intelligent Media Processing Laboratory.

ED-110: The future of Microsoft Windows 10, David Soll, Omicron, LLC.

Abstract: Microsoft's latest operating system, Window 10, provides a vast departure from all previous versions of Windows. Microsoft has chosen to redesign the user interface from the ground up in order to support a wider array of devices such as PC's, Tablets, and Smart Phones. This drastic change means a change in how the operating system is used and how it integrates into other applications now that the "Cloud" is so prevalent. David Soll will demonstrate and talk about Windows 10, its plusses and minuses. He will discuss what "Cloud" integration means to you and the variety of editions of Windows 10. This talk is designed to help attendees better understand Windows 10.

Bio: See first talk in this room.

ED-109: Developing Apps for Android (Part 2), Barry Burd, Drew Univ.

Abstract: In this session, I'll show you how to get started creating apps. In this second 50 minutes, I will focus on the Android.

Bio: Same as in this room two hours earlier.

ED-107: Arduino Workshop, Continued

ED-105: Java Advanced Features, Michael Redlich, ACGNJ.

Abstract: Java is an object-oriented programming (OOP) language created by James Gosling at Sun Microsystems that was first introduced to developers in 1995. It is one of the most popular programming languages for client/server web applications and there are many scripting languages (Clojure, Groovy) that seamlessly interact with Java. Much of Java's language syntax was derived from the C++, but as James Gosling once stated, "Java is C++ without guns, knives, and clubs." This in-depth seminar will cover some of the advanced features of Java. Four main topics will be presented: Java Beans, exception handling, generics, and Java Database Connectivity (JDBC). Each of these topics will be individually discussed and sample code will be reviewed to demonstrate how each feature is implemented.

Bio: See first talk in this room.

ED-204: **Lockpick Village, Continued**

***********1:30 pm to 2:25 pm***********

ED-115: How Safe Are Wireless Wearable Devices?, Allen Katz, TCNJ.

Abstract: With the exponential growth in wireless technology, questions on the risk to humans from exposed to electromagnetic (E&M) energy at radio frequencies (RF) and microwaves have grown. This has been the case for wearable wireless devices, where articles citing health risks have heightened concerns. This presentation will discuss the risks associated with non-ionizing E&M radiation and how to insure your safety. The RF level of common wireless sensors and devices employing Bluetooth, WiFi and cellular technology were measured during normal operating conditions. The emissions of the highest power common source, microwave ovens, were also investigated. These results will be discussed in this talk. (This research was done with Joe Jesson and Tom Brennan from TCNJ and supported by NJDOT and UTRC).

Bio: Allen Katz is a professor of E/CE at TCNJ and co-founder of TCF. He has more than 25 years of experience in the RF and microwave industry. He received a DSc and BS degrees in EE from NJIT and an MSEE from Rutgers University. He is founder and President of Linearizer Technology, Inc, Linear Photonics, LLC and Linear Space Technology, LLC. Al is a Fellow of the IEEE and a past Microwave Society Distinguished Lecturer. He holds 17 patents, has written more than 100 technical papers and has received numerous awards for his technical contributions. He is also a radio amateur, K2UYH.

ED-211: How to Effectively Present Your Technical Expertise, Thomas Lombardi, Presentations Plus.

Abstract: A great technical idea - a revolutionary break through - will go nowhere if it can't be effectively explained and communicated. Across a lunch table, in a conference room or in front of an audience of potential clients, the ability to effectively communicate one's expertise can make the difference between success or failure. This session covers proven techniques for improving presentation/communication skills and how to apply them in all types of interactions - with colleagues, clients and in business situations. It will provide tips on presenting in front of any size group. Topics include: 1) Who is the Audience - Why it's important to know, 2) How to get to the point right away – organizing thoughts and developing a "Main Message", 3) Dealing with anxiety - how to make it work for you, 4) Effective delivery techniques no matter what the setting or size of group, 5) Speaking to technical, non-technical or "mixed" audiences, and • Audience involvement.

Bio: Tom Lombardi, Principal of Presentations Plus is a presentations skills trainer and public speaking coach. He presents in-house programs for groups and one-on-one coaching. Tom is also a frequent speaker on presentation skills at professional society meetings and colleges. He has authored several articles including *"Public Speaking: A Great Business Development Tool"*, Consultants News and "*Talk Beyond the Speech Also Matters"*, National Law Journal. Prior to forming Presentations Plus in 1990 he was a Principal of Executive Enterprises Inc., a national management education organization. He is a graduate of the Bernard M. Baruch School of Business of the City University of New York, he holds both BBA and MBA degrees in Marketing.

ED-209: **Bitcoin, Blockchain, Cryptocurrency Better than Gold?, Don Hsu, Dominican College.**

Abstract: Steve Wozniak Apple Co-Founder believes Bitcoin is better than gold. There are only 21 million Bitcoin being mined, so it is not surprising Bitcoin was $6000 lately. This talk will discuss Cryptocurrency, Bitcoin, Ethereum, Blockchain technology, digital transaction, mining in China, software wallet, security issues, payment providers, major US or European banks adopting Bitcoin, investment options, venture capital firms, risk, benefits, volatility, academia research and industry trends. Speaker will provide specific examples of investing in bitcoin and other cryptocurrency.

Bio: See room ED-208, one session earlier.

ED-208: **Computer Music from Sounds to Symphonies, Don Slepian, composer/artist.**

Abstract: Computer music has come a long ways from its humble beginnings at Bell Labs in Murray Hill. Don Slepian will demonstrate the real time capabilities of a small network of musical computers in an interactive workshop format. For those interesting in programming he will be happy to show MIDI (Musical Instrument Digital Interface) programming using a scripting GUI, Plogue Bidule. The program will be guided by your questions and requests. Expect some good music.

Bio: Composer, digital keyboardist and instrument designer Don Slepian sold his first computer music records here at the 1982 Trenton Computer Fair. He was Artist In Residence at Bell Laboratories in Murray Hill, NJ. He has been a featured electronic performer at Lincoln Center in NY, the Pompidou Centre in Paris, the full maximum security unit of the Women's Prison of NJ and the Mae La Refugee Camp at the Burma border in west Thailand. With an unusual 50 year career in music technology he has outlived most of his peers.

ED-207: Workshop on How to Create Virtual Reality Apps, Orlando and Maria Rivera.

Abstract: Join us for an exciting workshop on how to set up and execute a Virtual Reality VR (App). You will learn how to select cameras, select software, select headsets and gear; as well as how to target the various devices from mobile to desktops, and creating your app. Details include: a) AR, VR, ML (mobile based AI); and Wearable technologies (Fitbit, iWatch, AR/VR, etc; b) Deeper drive into VR project and gear - we will be using (headsets like Oculus Rift & Google), VR cameras, etc.); c) Shooting 360 footage (both Photo & Video) to use in project; d) Basic stitching & editing of your footage; e) Creating the interactive elements for the VR/360 project; and f) Delivering the VR project/App to Web, iOS, and Android devices.

Bio: Orlando Rivera (DigitalSummit.TV) has developed VOD and Live Streaming solutions for QVC, AT&T, InterCall Inc (largest conference and collaborations service provider in the world), BMG, Mobile development for JPMorgan Chase and IBM Watson Center. He is developing VR & AR solutions for the education and Corp market. Orlando has also been a Visual Effects Supervisor for indie feature films, shorts, 3D animations (www.FranknSon.com) and games for the iPad, iPhone & Corp business IOS apps. Maria Rivera has over 12+ years experience in training and development and digital video. She has developed blended training solutions for various industries including pharmaceutical, real estate, and government agencies. She is also a member of the National Speakers Association. She has led strategic initiatives at The Steven L. Newman Real Estate Institute at Baruch College as the Associate Director and also at the CUNY School of Professional Studies/ACS Project as a Deputy Director. She is currently the Associate Director, of the Management and Technology and Project Management Graduate Programs at New York University School of Professional Studies.

ED-206: Home Chip Fab: Semiconductor and IC Fabrication in the Garage, Sam Zeloof, Hunterdon Central High School.

Abstract: Silicon wafers, high vacuum process equipment, and electron microscopes are usually found in million-dollar clean rooms and research facilities but are far from a common sight in a home garage/workshop. This talk will cover the topics of semiconductor physics, IC fabrication, photolithography, high vacuum chamber design, thin film deposition, electron microscope repair, and many others to give an overview of DIY integrated circuit fabrication techniques.

Bio: Sam Zeloof is a senior in high school at Hunterdon Central in Flemington, NJ. In his free time, he enjoys working on electronics and semiconductor fabrication related projects and is currently on a quest to completely take over his parent's garage. He frequently publishes his experiments and projects on his blog <http://sam.zeloof.xyz/> and on YouTube channel <https://www.youtube.com/user/szeloof>.

ED-113: First Steps to Connecting and Controlling Using the Internet of Things (IoT), Evan Williams, Web consultant.

Abstract: Probably most computer enthusiasts have heard about or programmed and used an Arduino microcontroller unit (MCU) or a Raspberry Pi Small Board Computer (SBC). But the Internet of Things (IoT) in which actual devices can reorder their world, like a refrigerator that can automatically restock itself or a weather station that merely reports back on its status is still new. This presentation will show how to enable embedded devices to send and receive information and instructions and make decisions themselves. The speaker, Evan Williams has on-the-job experience with LInux and Unix and has built a portable hotspot called "LocalPOD."

Bio: Evan Jan Williams began his career in 10th Grade at Princeton University's Microprocessor Lab run by the Department of Mechanical and Aerospace Engineering. This laboratory taught students how to interface 8-bit computers to real-world devices. After graduating with a degree in Literature from Thomas Edison State College, he worked for 25 years in Computer Software and Servers. After spending 10 years developing websites his career came full circle at AT&T Middletown where he worked on three large web dashboard projects. He also holds a degree from Rutgers University, New Brunswick in

Computer Science. He likes to bicycle and garden and in addition to enjoying writing and photography, and is a HAM Radio operator.

ED-110: Augmented Reality: What It Is and Its Amazing Applications, William Silverman, Brookdale Computer Users Group.
Abstract: Be sure to bring your smart phone to share in the fun of experiencing some of the examples that will be discussed.
Bio: William Silverman is a retired NYC high school science teacher with 34 years of experience. He has two licenses, chemistry and physics. After retiring, he went back to school to earn an associate degree in computer graphics. He is presently the head of the computer graphics workshop for the Brookdale Computer Users Group, which is the largest computer club in NJ. He is also a trustee of the club. William went on to earn the title of Master Gardener. He is an avid horticulturist and orchid grower. Most recently, he received three days of intensive training with Al Gore and his Climate Reality Project.

ED-109: Building a public WiFi system with pfSense, Doug Ferguson, DellEMC.
Abstract: This talk will detail the presenter's personal experiences during building a highly successful public/private WiFi system, which includes OpenVPN for remote access for his church.
Bio: Doug Ferguson is a Senior Advisor and support engineer for converged infrastructure products at DellEMC. He is a graduate of Rutgers University College of Engineering. He is also a computer hobbyist who loves learning about new technologies. Having taught himself to program in high school, he continues to explore numerous areas of computers including video editing, web design, visualization, and robotics. He is the "Network Czar" of his local church. Doug is a radio amateur (KB2JMG), and has been a presenter at TCF since 2002!

ED-107: Arduino Workshop, Continued.

ED-105: C++ Advanced Features, Michael Redlich, Amateur Computer Group of New Jersey.
Abstract: C++ is an object-oriented programming (OOP) language created by Bjarne Stroustrup at AT&T Labs that was first introduced to developers in 1985. It is one of the most popular programming languages and is usually the language of choice for applications such as systems software, device drivers, embedded software, and high-performance client/server applications. This in-depth seminar will cover some of the advanced features of C++. Four topics will be presented: overloaded operators, templates, exception handling, and namespaces. Each of these topics will be individually discussed and sample code will be reviewed to demonstrate how each feature is implemented. There will also be an introduction to the Standard Template Library.
Bio: See first talk in this room.

ED-204: Lockpick Village, Continued.

***********2:35 pm to 3:30 pm***********

ED-115: Designing and Prototyping Low-Cost Medical and Environmental Sensors, Joe Jesson, RFSigint and TCNJ.
Abstract: A multitude of low-cost medical sensors and sensor integration development systems, or SDK's, have been introduced to the embedded engineer. Joe Jesson will demo how engineers can develop a Pulse Oximeter and Heart-Rate Sensor for a wearable health application - a key patient measurement. He will start the sensor IC specifications and go through the entire agile engineering process including rapid prototyping, software development and validation cycle, and highlight risk mitigation and safety design techniques. Constraints discussed include cost, size, security, and power requirements. He will also discuss a remote (wireless) mobile radiation and air particulate sensor platform. We will discuss various external portals for display and analytic platforms and show multiple formats for graphing and monitoring the captured sensor data. Joe will include engineering constraints such as safety, cost, size, security, power requirements, and the associated battery selection risks.
Bio: Joseph Jesson has more than 25 years working with embedded wireless systems, Telemetry, Telematics, M2M, and the Internet of things (IoT). Joe is currently CEO of RFSigint, a wireless and IoT patent subject matter expert, and has held the Chief Technology Officer (CTO) position at General Electric, where he was awarded the GE Edison Award in 2007, Able Devices, and Assurenet Inc. He has also had IT Architecture positions at Amoco and BP, and staff engineering positions at Motorola and The University of Chicago. Joe has a MS degree from DePaul University and is currently working on his PhD at NJCU. He is also the Chair of the PCJS IEEE Life Group.

ED-209: Introduction to Python. Chuck Knight, ExxonMobil.
Abstract: Python is a very powerful programming language used in a variety of engineering and scientific settings. Its popularity has spread in recent years mainly due to its ease of use and the large collection of support libraries. In this talk Chuck Knight will give a gentle introduction to the language using a hands-on, demonstrative approach. By the end of this talk attendees should know how to get started with writing simple scripts in Python, and have a general understanding of the Python ecosystem.
Bio: Chuck Knight has been working in the IT industry for 37 years; the last 20 years with ExxonMobil. He has spent his career working on various scientific and high performance computing platforms for applications including NASA's space shuttle thermal analysis, reservoir simulations and seismic imaging, as well as many other proprietary and commercialized efforts. Chuck is currently the Software Engineering Advisor for ExxonMobil's Scientific Computing team at ExxonMobil's Corporate Research Center. Chuck obtained his BS in Computer Science from Michigan State University. Chuck also has an MS in Computer Science as well as his MBA from the University of Houston.

ED-208: The Hacking Methodology, Randall Cole, Vertical Screen.
Abstract: The purpose of this lecture is to give people a hacker defense attitude by understanding the mythology used to compromise systems. This lecture would include a live demonstration interwoven into the lecture. The demo would be in a non-network connected virtual environment.
Bio: Randall Cole is Vice President of Information Technology for Vertical Screen, a background check company. He has been in IT for more than 20 years, specializes in enterprise networking and security, and has managed all aspects of an IT department. He is a Microsoft CSE, CPMP, ITIL Certified, CISSP and CEH. Randall has an MS in Information Science from Pennsylvania State University and a Bachelor's degree from Temple University. He is an adjunct instructor for Gwynedd Mercy University, teaching Computer networking and security. He has also competed for the last ten years in various competitive hacking contests at DEF CON, as well as a volunteer for the convention.

ED-207: Workshop on How to Create Virtual Reality Apps Continued.

ED-206: Home Chip Fab: Semiconductor and IC Fabrication in the Garage, Continued.

ED-113: Home Automation, Paul Bergsman, Author and consultant.
Abstract: Learn how to control lights, thermostats, home heating systems, and switches; all from your Smart Phone. Have cameras monitor your home and on *motion* alert you of an intruder, send photos to your hard drive, your Gmail account and your Smart Phone. In addition, you can monitor for water leaks in your kitchen, bath room, and water heater. Free apps will be presented that will help make the job easier, and guide you through the steps needed to become the true commander of your home.
Bio: Paul Bergsman is the author of "Controlling the World with Your PC", which was in print for over 12 Years. He has a BA in Education and a MA in Computer Science, and holds a U.S. Patent for an "Electro Mechanical Alarm Lock". He is now retired, after teaching in the Philadelphia Public Schools for over 27 years.

ED-110: Introducing Microsoft Hololens - what it is, what it can do, William Silverman, Brookdale Computer Users Group.
Abstract: Although the Hololens was released to developers on April 1, 2016, it isn't yet available to the public, but that won't prevent us from getting a remarkable introduction of what lies ahead with this exciting new technology.
Bio: See previous talk in this room.

ED-109: Developing an Alexa Skills Kit for Amazon Echo, Barry Burd, Drew University.
Abstract: Alexa is Amazon's entry in the intelligent voice-enabled assistant market. An Alexa-enabled device sits quietly in your living room waiting for you to make a request. You talk to Alexa the way Captain Picard talks to his ship's computer. You say "Alexa, tell me a joke," "Alexa, turn on my TV," or "Alexa, what's tomorrow's weather?" In this presentation, Barry will demonstrate ~~the~~ Alexa's capabilities and show you how to develop new skills for the Alexa family of devices.
Bio: See talk at 10:15 am in this room.

ED-107: Radio Frequency Beyond Radio, Jonathan Allen, RF Electronics Consulting.

Abstract: One generally associates radio frequency (RF), with communication via electromagnetic waves. RF, however, has many other uses. Over the past century, radio frequency has not only connected the modern world, but has also helped build it. It creates products and processes that would otherwise be difficult or even impossible. Applications span the range from plasma processes to the manufacture of ICs and other electronics, as well as to optics, to structural materials, medical procedures, and the food we eat. This talk will cover some of the most important non-radiating uses of RF.

Bio: Jonathan Allen received his Ph.D. in physics from Washington University in St. Louis, and is an applied physicist by training. For at least 30 years he has worked mainly in electronics R&D with an emphasis on instrumentation and RF power applications. Designing and building custom instruments and RF equipment for both labs and production facilities has required craftsmanship as well as science. Jonathan's patents and publications are mainly in solar photovoltaics and atmospheric analysis instruments. He is a Senior Life Member of both the IEEE and the American Physical Society.

ED-105: C++ Advanced Features, Michael Redlich, ACGNJ.

Abstract: C++ is an object-oriented programming (OOP) language created by Bjarne Stroustrup at AT&T Labs that was first introduced to developers in 1985. It is one of the most popular programming languages and is usually the language of choice for applications such as systems software, device drivers, embedded software, and high-performance client/server applications. This in-depth seminar will cover some of the advanced features of C++. Four topics will be presented: overloaded operators, templates, exception handling, and namespaces. Each of these topics will be individually discussed and sample code will be reviewed to demonstrate how each feature is implemented. There will also be an introduction to the Standard Template Library.

Bio: : See first talk in this room.

*****3:40 pm to 4:35 pm*****

ED-115: KEYNOTE: Healthcare Innovation Incremental and Exponential, Nick van Terheyden, former Chief Medical Officer for Dell.

Abstract: In this presentation Nick will explore the potential for technology and innovation - everything from wearables, genomics and robotics that are washing over our world at an exponential rate and influencing every aspect of our activities and what it will mean to our lives and in particular to the delivery of healthcare. How can this technology revolution change the cost profile and democratize access to healthcare? Join Nick as he takes you on an exciting journey into the future of healthcare and the exciting developments that will increase accessibility to healthcare and will revolutionize the way care is delivered.

Bio: Nick van Terheyden is a leader in Digital Healthcare and Innovation and former Chief Medical Officer for Dell. He provides strategic insights and guidance to support healthcare organizations, medical professionals and patients through information-enabled healthcare. He brings an incremental approach to developing successful strategies and applies his expertise to achieve a technology environment that is interconnected, efficient and patient-focused. He is a highly sought out speaker on the practical and futuristic use of healthcare technology and how it can improve patient engagement and wellness.

*****9:30 am to 3:00 pm Poster Presentations *****

ED Second Floor Lobby: Visual & Aural Telepresence Via NAO Robot; Theresa Pham, Chelsea Cantone and Daniel Ponsini, TCNJ students.

Abstract: A growing need for advanced telepresence systems has developed in recent years as the internet has increasingly globalized communication. This project will utilize a NAO robot to create a telepresence application, allowing a person to feel immersed in a location in which they are not physically present. A virtual reality headset consisting of a Google cardboard (with a smartphone strapped in), headphones, and microphone will be used in order to wirelessly transmit data between the NAO and its user, who will operate the robot. A mobile website/app will be used as the interface between the two. The goal is to develop a system which will permit its user to see and hear into a different location using a NAO robot, allow for speech that prompts the robot to speak, and control of the robot's head motions using data sent from the microphone in the headset. A motion controller developed in a previous year's project will be incorporated to give the user control of the robot's full range of motion.

Bio: Chelsea Cantone is a senior computer engineering student at TCNJ. After graduation, she will begin working as an engineer at Lockheed Martin RMS in Moorestown, NJ, and plans to pursue an MSEE part time. Theresa Pham is senior computer engineering student at TCNJ. Starting in June, she will be an Application Developer as part of the Technical Development Program at AT&T in Middletown, NJ. She finds algorithm design interesting and would like to learn more about front-end development in the future. Daniel Ponsini is a senior EE student at TCNJ. This summer he will continue working full-time as an Electrical Engineer for LGS Innovations where he interned. He is also interested in picking up more programming skills as he continues to work with embedded systems at his workplace.

ED Second Floor Lobby: TCNJ Parking Lot Availability System using a Campus-Wide Wireless Network, Matthew Cook, Nikita Eisenhauer, Stephanie Fournier and Warren Seto, TCNJ students.

Abstract: As TCNJ increases its student and faculty size, there is an ever increasing need to provide coordination to accommodate its growth. One area where coordination can be improved is related to campus parking. Many commuters attempt to find available parking spaces by driving around to different parking lots and guessing where parking spaces may be available. The Parking Lot Availability and Traffic Prediction System will provide drivers with information about the availability of free parking spaces, which will not only alleviate traffic congestion but also increase coordination for commuters. This system is made up of three components: detection nodes to detect traffic conditions, a base station that will host a wireless network to collect traffic data, and a user interface to see current traffic data at a glance. Each detection unit contains: sensors, a wireless radio, and a custom solar charging circuit for renewable outdoor operation. The base station contains a microcomputer and a wireless radio to communicate with each detection unit. The final product is planned to be deployed on campus to allow commuters to view the status of open spaces and make TCNJ a better and more coordinated campus.

Bio: Matthew Cook is a senior Computer Engineering student at TCNJ from Bridgewater, NJ. His interests include programming, embedded systems, and robotics. His interests outside of school include traveling, going to NJ Devils games, and posting pictures of his dog, Roxy, on social media. His plan for the future is to get a full time job after graduation. Nikita Eisenhauer is a senior Electrical Engineering student at TCNJ from Ewing, NJ. His career interests are in antenna and RF design as well as wireless communications. Outside of school he enjoys doing personal research in various fields including genetic engineering, microwave engineering and phased array technology. He also loves drawing and riding his motorcycle. His future plans are to be employed as an RF engineer or related position. Stephanie Fournier is a TCNJ senior in the Electrical Engineering program. She plans to pursue an MS in Electrical Engineering once employed after graduation. Her interests include wiring/circuitry and working with CAD for PCB design. She is currently working on building an Arduino Uno using Eagle CAD software. Warren Seto is a senior Computer Engineering student at TCNJ. His interest include low level systems programming and working with embedded and IOT devices. He is currently working on Machine Learning projects related to image recognition/segmentation and deployment on various platforms. After graduation, he will be joining Apple Inc. as a Human Interface Device Engineer working on the User Experiences Team.

ED Second Floor Lobby: Triggered Guitar Effects Platform, Bryan Guner, Haley Scott and Ralph Quinto, TCNJ students.

Abstract: In live performance, guitar effect pedals are a versatile yet limiting asset. They require presence of mind on the part of the performer and restrict the performer to the area of the stage in which the pedal board is located. These constraints limit the performance quality and stage presence by splitting the performer's focus. This project proposes an automatic solution to the restrictions that guitar effect pedals present. The performer will record the first performance into the proposed software, which will analyze and store the sequential frequencies in relation to the effect trigger points. The performer will then utilize the software during a subsequent live performance. The effect is triggered when the preceding frequencies of the live performance are recognized against the first performance. This concept will be achieved through the use of Pure Data, a GUI for audio manipulation applications. Currently, our team is tackling two approaches to track performances. The first approach implements a dynamic time warping algorithm, which is a more robust approach to mitigating live performance error. The alternate approach encompasses a counting scheme that tracks the instances of the change in a specific note immediately preceding the trigger event. Our team has created a system to read in a guitar signal, isolate subsections of a performance, and implement the aforementioned alternate approach. When this system counts the predetermined number of instances of a specific note within a given tolerance, the effect will activate.

Bio: Ralph Quinto is a senior studying Computer Engineering at TCNJ. He is the group's software engineer. Haley Scott is a senior Electrical Engineering at TCNJ and the architectural manager for the project. Bryan Guner is a senior

studying Electrical Engineering at TCNJ. He is team leader as well as being the developer of digital signal processing a protocols.

ED Second Floor Lobby: Smart Pet Door, Jason Ivins, Bryan Jimenez and Alex Kalemba, TCNJ Students.

Abstract: Everyone loves their pets, and people are willing to spend exorbitant amounts of money on their pet. The team has set forth to design a unique and cutting edge system for pet access control, which far exceeds the currently available measures. The team aims to create a reliable and secure way of allowing pets to enter and exit their home freely; while at the same time allowing the owner to: set curfews, view statistics, and manage other tasks via an Android mobile application. The system design involves the use of the latest in Bluetooth beacon technology, and a cutting edge microprocessor with built in receivers for Bluetooth and WiFi compatibility. The team has so far successfully connected the RedBear Duo microprocessor to a WiFi source and programmed the microprocessor, through the Particle Web IDE (Particle Build), to detect a local Bluetooth beacon with a specific ID. The team has also thus far established the framework and architecture of the mobile application's use of the DynamoDB database they will be using, hosted through Amazon Web Services. In the upcoming weeks, the team plans to implement and test the system using a standard pet door with the designed features. Once the core features have been implemented, the team will use the remaining time and budget to improve on system performance and to achieve as close to 100 percent system reliability as possible.

ED Second Floor Lobby: App-based visual aid utilizing laser diffraction and Hough transform, Jacob Levine, TCNJ students.

Abstract: Existing assistive devices for aiding sight impaired individuals leave a lot to be desired. The traditional white cane has significant drawbacks in range, as well as the height of objects, which can be detected. My project aims to create a new solution based on utilization of laser diffraction and image processing, as well as a common smartphone, in order to enable obstacle detection. This will allow users to navigate more efficiently, quickly, and detect obstacles at a farther and wider range than traditional methods and with less active user involvement than before.

ED Second Floor Lobby: Sampled Sound Polyphonic Synthesizer, Amauri Lopez and Darrien Pinkman**, TCNJ Students.**

Abstract: In music production, being able to produce sounds originating from a wide variety of instruments as a strategy to attract the listener and to create pieces that would otherwise be played and recorded through live performance is very important. It allows the producer to write, or at least model, sections of music without needing the real instrument at hand or even the possible expertise required to play that particular instrument. By using pre-recorded digital samples to represent the sounds that would otherwise be produced through a live performance, and manipulating these samples to produce sounds of varying pitch, duration, and effect, the producer can essentially compose music exhibiting many different instruments and styles of play without ever having to play the instruments themselves. This project aims to recreate such a music synthesizer that uses sampled sounds as WAV files downloaded from the internet and wave manipulation algorithms to remodel these sounds to desired outputs, using a raspberry pi as the base computational platform and keys built onto a breadboard to model a launchpad for synthesis.

ED Second Floor Lobby: Hearing Aid Device for Pets, Daniel Poracky, TCNJ students.

Abstract: This project involves the design of special hearing aids for deaf pets. The main objective is to provide a means for owners to vocally communicate with their pets. The aid will work with pets that suffer from full and/or partial hearing loss. It will consist of a collar sized for the animal containing vibrating motors that will alert the pet to sounds in its nearby environment. The sounds will be picked up through the use of one or more microphones, amplified, filtered/processed and converted into mechanical vibrations to alert and produce tactile feedback for the pet. The air will include a rechargeable battery that will last for at least 6 hours.

ED Second Floor Lobby: Orchestra: A Distributed Video Presentation System, Brandon Siebert, TCNJ students.

Abstract: Orchestra is a system of applications for the purpose of synchronizing video playback between mobile devices. Using the Orchestra mobile application, your device can become part of a video ensemble connected to a Raspberry Pi base station, which acts as the conductor. All members of the ensemble determine their playback location and playback speed based on the conductor, which communicates to the devices via multicast connectionless Bluetooth advertisement packets. Devices attempt to synchronize playback by using a deterministic algorithm to calculate and correct for a cumulative delay. If the device is out of sync, then it will attempt to seek its playback position provided by the next available synchronization packet. If the device does not receive packets for a period of time, it will continue video playback until it receives a new synchronization packet. The project is designed to facilitate an easy and accessible way for multiple devices to correct for playback drift using an affordable controller for the purposes of applications such as video walls or interactive audience experiences.

Sarnoff Collection Tours 1:00 am to 3:00 pm (open to 4 pm) RWH 2nd Floor

The Sarnoff Collection was originally established by RCA in 1967 as the David Sarnoff Library. Over the decades, the collection grew to include a museum, archives, and library. The museum collection, which comprises more than 6,000 artifacts related to the major developments in communication during the 20th century, was donated to The College of New Jersey in 2010. At the same time the library and archival holdings, which include Sarnoff's papers and memorabilia; 25,000 photographs; and thousands of notebooks, reports, and publications related to the histories of RCA and the RCA Laboratories, were transferred to the Hagley Museum and Library in Wilmington, Delaware.

Subject to last minute changes rev-05a

Saturday	ED-115 Wearable Tech	ED-211 Entrepreneurship & Bus.	ED-209 IT-PC	ED-208 Social Media & Apps	ED-207 History & Technology	ED-206 Education & STEM	ED-113 Technology & Hardware	ED-110 Microsoft & Trends	ED-109 Software/ App Dev.	ED-107 Arduino & Software	ED-105 OOP University	ED-103 Amateur Radio	ED & RWH Exhibits
10:15am to 11:10am	Future of Medical Device Development *B. Acevedo*	mTrigger: Biofeedback Reinvented *A. Lalime*	Wordpress Bootcamp *L. Judice*	IP Research & Discovery with InnovationQ Plus *J. Jesson*	Research & Development in AI - An Update *A. Schwartz*	Getting Started: PCs/Tablets, Internet & Digital Photography *H. Hnitz*	Agricultural Robotics *R. Kannan*	**Introduction to HTML5** *D. Soll*	Quantum Computing with Q# Language *B. Burd*	**Hands-On Arduino Workshop for Beginners** *Conducted by K. Frolio* *(Limited Space; Bring Your Laptop! Load Free Arduino Software before attending: www.arduino.cc/en/Main/Software)*	Introduction to OOP Design Principles *M. Redlich*	**Ham Cram 101 Ham Radio License Exam Preparation Cram Course** Ham Cram Session begins at 9:00am and goes to 12:30pm Practice Exam given at 1:30pm Walk-in Real Exam given at 3:40pm Conducted by the David Sarnoff Radio Club www.n2re.org	**Theremin in Room ED-207 at 11:20am** **Lockpick Village Workshop on How to Pick Locks, Repeated Hourly in Room ED-204** **Poster Presentations** **Digital Photo Exhibit** **Vintage Computers** **Club/Org Tables** **Tour the Sarnoff Museum of Historic Technology (1pm-4pm in RWH, 2nd Floor)**
11:20am to 12:15pm	**Tricorders: Making Science Fiction Reality** *G. Harris*	An IoT Strategy for Your Company *Z. Mannan*		Self-Publishing in the Digital Age *S. Marshall*	The Theremin & Technical Joy *K. Rosser*	Best Websites and Web Dark Secrets for 2018 *E. Kaplan*	Introduction to Robotics and the Robotics Pavilion *S. Kim*	Stock Market Timing Using Neural Networks *D.Fishbein*	**Writing Apps, Part 1: for iPhone** *B. Burd*		Getting Started with Java *M. Redlich*		
12:25pm to 1:20pm	Q & A on Wearable Tech Development *B. Wong*	Privacy & Anonymity in the Modern Age *C. Hofstetter*	Introduction to Switch Mode Power Supplies *M. Bianco*	Internet Job$$$ *D. Hsu*	The Space Shuttle Computer Systems *F. O'Brien*	Do It Yourself: Home Automation and Demo *N. Cherry*	Seeing in Pixels: Practical Neural Networks *W. Seto, B. Siebert & S. Maxwell*	**Introduction to Windows 10** *D. Soll*	**Writing Apps, Part 2: for Android** *B. Burd*		Advanced Java *M. Redlich*		
1:30pm to 2:25pm	How Safe are Wireless Wearable Devices *A. Katz*	How to Effectively Present *T. Lombardi*	Bitcoin: Better than Gold? *D. Hsu*	Computer Music: Sounds to Symphonies *D. Siegfan*	Workshop: How to Create Virtual Reality (VR) Apps *O. & M. Rivera*	Home Chip Fab: How to Make Semiconductors and Integrated Circuit Chips (ICs) at Home *S. Zeloof*	Connecting and Controlling the IoT *E. Williams*	Augmented Reality (AR) *W. Silverman*	Building a WiFi System with pfSense *D. Ferguson*		Getting Started with C++ *M. Redlich*		
2:35pm to 3:30pm	Advances in Low-Cost Med. & Environment Sensors *J. Jesson*		Introduction to Python *C. Knight*	The Hacking Methodology *R. Cole*			Home Automation *P. Bergaman*	Microsoft Hololens *W. Silverman*	**Developing Alexa Skills** *B. Burd*	Radio Frequency Beyond Radio *J. Allen*	Advanced C++ *M. Redlich*		
3:40pm to 4:35pm	***Featured Keynote Speaker:*** **Nick van Terheyden M.D., former Chief Medical Officer for Dell, will talk on "Healthcare Innovation Incremental and Exponential" in Room ED-115**												

ED = New Education Building RWH = Roscoe West Hall BSC = Brower Student Center

WiFi Connect: SSID: Guest-at-TCNJ3
Login: guest2193 Password: uhubeve7