2022 IEEE/ACM TCF Information Technology Professional Conference (TCF-ITPC)

Program Book

Date: Friday, March 18, 2022
Time: 8:30AM to 5:00PM
Location: Virtual via Zoom

Sponsors:

Princeton / Central Jersey Chapter of the IEEE Computer Society

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Table of Contents

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Thank you to our Sponsors, Speakers, Volunteers and Participants

Also, thank you to the Trenton Computer Festival and The College of New Jersey

Conference Logistics

Dear Participants,

Welcome to the **2022 16th Annual IEEE/ACM Information Technology Professional Conference at TCF**!

We have an exciting program this year and are looking forward to seeing you.

Schedule:

The ITPC Conference program schedule may be found in this program book and posted on our website.

Our conference presentations are scheduled to at **begin at 9:00 AM** and **conclude by 5:00 PM** on **Friday, March 18, 2022**.

Registration:

In-person registration will not be required this year as this conference is virtual and free of charge.

Presentations:

Both tracks will be presented via individual Zoom links posted on the ITPC website and shown here:

- Track 1 – Applications Development
- Track 2 – Security/DevOps/Agile

Facilitated Networking Session:

It was decided not to conduct a facilitated networking session this year due to a second year of virtually running this conference. Instead, the plan will be to take a 30-minute lunch break before introducing the new Women in Cybersecurity roundtable. We hope the facilitated networking session will return in 2023.

Women in Cybersecurity Roundtable:

Cybersecurity continues to be one of the most critical fields in Information Technology, with some of the most interesting, complex and varied career opportunities. Dr. Rebecca Mercuri, who has been performing digital forensic investigations and providing expert witness testimony since 1998, will moderate this panel session that will discuss the many challenges that women face in this rewarding work.

Participants will include:

- Rebecca Mercuri
- Isabel Wagner
- Jean Pawluk

This session will be held from **12:30 PM to 1:30 PM** using the **Track 1 Zoom link**.

Trenton Computer Festival (TCF):

The **46th Annual Trenton Computer Festival** will also be a virtual event scheduled for Saturday, March 19, 2022 between 9 am and 5 pm. This year's theme is **Disrupting Environmental Change using Technology**. The program includes over 50 panel sessions, workshops, tutorials, demonstrations, educational events and a Flea market. For more information, please visit the TCF website.

TCF Keynote:

The TCF keynote speaker will be Dr. Bob Kopp, Director of the Institute of Earth, Ocean & Atmospheric Sciences and a professor in the Department of Earth & Planetary Sciences at Rutgers University, who will be presenting "**Climate, Technology and Democracy**."

Posted Presentations:

Speakers who have provided a PDF copy of their slides will Some of the presentations may be posted on the TCF ITPC website.

Thank you for your participation,

Michael Redlich
Conference Chair

IEEE Information Technology Professional Conference

Program Schedule

Time (EST)	Track 1 Application Development	Track 2 Security/DevOpS/Agile
8:30am	WELCOME	
9:00AM	Getting Started with Jakarta EE and MongoDB presented by **Michael Redlich**	Succeeding with Agile Adoption: A Practioner's Perspective presented by **Greg Tutunjian**
10:00AM	log4(nut)shell: A Brief History of the December Vulnerabilities presented by **Olimpiu Pop**	An Introduction to Quantum Computing presented by **Kory Becker**
11:00AM	Faster Feature Releases via Kubernetes Sandbox Deployments presented by **Michael Sava** and **Michael Luis Santos**	Metaverse - Developer Perspective presented by **Rajiv Kewalramani**
12:00PM	LUNCH BREAK	
12:30PM	WOMEN IN CYBERSECURITY ROUNDTABLE	
1:30PM	Pattern Matching for Java presented by **Neha Sardana**	Bitcoin, Blockchain, Cryptocurrency Better Than Gold? presented by **Don Hsu**
2:30PM	Teaching Programming via the Gradual Occam Razor presented by **Enzo Alda** and **Jean Yazbek**	What Did Life Under COVID-19 Teach Us About DevOps presented by **Howard Deiner**
3:30PM	Algebraic Data Types in Java presented by **Chandra Guntur**	Privacy Law Update 2022 presented by **Fred Wilf** and **Josh Waterston**
4:30PM	CLOSING REMARKS	

9:00 AM Sessions

Getting Started with Jakarta NoSQL and MongoDB

By Michael Redlich
Track 1 – Applications Development

The **Jakarta NoSQL** specification defines a set of APIs to provide a standard implementation for most NoSQL databases. Considered "one API for many NoSQL databases," Jakarta NoSQL supports the four types of NoSQL databases: column family, document, graph and key-value.

This presentation will provide an introduction to the Jakarta NoSQL specification, **Eclipse JNoSQL**, the compatible implementation to the specification, a brief overview of all four NoSQL database types followed by a demonstration of a MongoDB application built with Jakarta NoSQL.

About Michael Redlich:

Michael Redlich is a Senior Research Technician at ExxonMobil Research & Engineering in Clinton, New Jersey (views are his own) with experience in developing custom scientific laboratory and web applications. He also has experience as a Technical Support Engineer at Ai-Logix, Inc. (now AudioCodes) where he provided technical support and developed telephony applications for customers.

Mike's technical expertise includes object-oriented design and analysis, relational database design and development, computer security, C/C++, Java, Python, Matlab and other programming/scripting languages. His latest passions include MicroProfile, Jakarta EE, Helidon, Micronaut and MongoDB.

Mike has been an active member within the Java community for the past 20 years. He founded the Garden State Java User Group (formerly the ACGNJ Java Users Group) in 2001 that remains in continuous operation. Since 2016, Mike serves as a Java community news editor for InfoQ where his contributions include monthly news items, technical writing and technical reviews. Mike has co-authored nine (9) articles with Barry Burd for Java Boutique (now jGuru). He has presented at venues such as Oracle Code One, Emerging Technologies for the Enterprise (ETE), Trenton Computer Festival (TCF), TCF IT Professional Conference, Philly Java Users Group, Princeton Java Users Group and Capital District Java Developers Network. More recently, Mike has contributed to open source projects and participates on the leadership council of the Jakarta EE Ambassadors.

Mike holds a Bachelor of Science in Computer Science from Rutgers University.

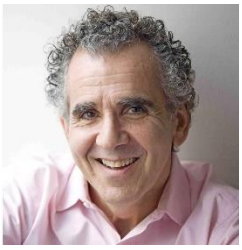
Succeeding with Agile Adoption: A Practioner's Perspective

By Greg Tutunjian
Track 2 – Security/DevOps/Agile

The most recent 10-years of The State of Agile Report reveal that Organizational Culture is the leading impediment to effective Agile Adoption and use (let alone "Agile Transformation"). Wishful thinking and checkbox exercises often take the place of realistic analysis, collaborative planning, and personal commitment (outside of Agile Teams, primarily). There are additional impediment themes from The State of Agile Report leading to effective (or destructive) Agile Adoption. These data correlate with my own experience of more than 21-years of using (or attempting to use) Agile effectively in the workplace. In this talk, I'll share these data, explain why and how these data are insightful and purposeful, and how you can better prepare your organization for effective Agile Adoption.

I'll share recommendations to address these impediments (often from outside Agile dogma) that I've found effective. I'll share additional resources to improve your likelihood of success. I'll share a few real-world examples of my (facilitating of) success and when success wasn't possible.

About Greg Tutunjian:



Greg is an independent consultant and creator of **Pattern Transformation** focused on helping individuals, teams, groups, and organizations make effective use of Agile Frameworks and supporting principles, practices, and tools. He doesn't see Agile as the Center of The World (of product and solution development). Greg believes (and has experienced) effective Agile adoption and use patterns available to simplify and accelerate product and solution development that can (under ideal conditions) include innovation outcomes, too.

As a former developer, team manager, people manager and leader (leading engagements and delivering services to non-technical users), Greg was fortunate to have sufficient latitude in each of these roles to be effective and successful. He would like to help others find comparable effectiveness, success, and happiness in their work.

10:00 AM Sessions

Log4(nut)shell: A Brief History of the December Vulnerabilities

By Olimpiu Pop
Track 1 – Applications Development

The family of vulnerabilities discovered in winter of 2021, emphasized the importance of software in today's society and the crucial role of open source software. With its ubiquity, log4j proved once more how straws can break a camel's back.

In this talk we will look at the timeline, magnitude and defenses against what is probably the most critical vulnerability discovered in the java world. And also the reactions of the software industry and even public space in the aftermath of its discovery.

About Olimpiu Pop:

Olimpiu Pop is the Head of Engineering at **Salt & Pepper**, a digital products company. He is a software engineer with experience in real-time applications ranging from financial software to identity and access management, and is passionate about tooling and optimising development flows.

Olimpiu has been writing Java community news for **InfoQ** since June 2020 and facilitates the **Transylvania Java Users Group**.

He is a member of the program committee for **Voxxed Days Romania** and the main editor and troublemaker of **Java Advent Calendar**.

An Introduction to Quantum Computing

By Kory Becker
Track 2 – Security/DevOps/Agile

What is it like to create software for a quantum computer? With its ability to perform calculations and processing in a distinctly different way than classical computers, quantum computing has the potential for becoming the next revolution in information technology.

In this presentation, attendees will be introduced to the core concepts behind quantum computing, including the double-slit experiment, potential applications, and a video game, Flying Unicorn - a game developed for a quantum computer.

About Kory Becker:

Kory Becker is a Senior Software Developer for **Bloomberg LP**. With a background in artificial intelligence and machine learning, she is the author of "**Building Voice-Enabled Apps with Alexa**" (2017 Bleeding Edge Press).

She has developed award-winning software products that have been featured prominently in publications like **PC Magazine**, **PCWorld**, **USA Today**, **Consumer Reports**, **Apple iTunes**, and **Google Chrome**. Her research has been referenced by leading sources, including **Google Brain**.

You can find her articles on **Primary Objects** and social media presence on **Twitter** and **GitHub**.

11:00 AM Sessions

Faster Releases via Kubernetes Sandbox Deployments

By Michael Sava and Michael Luis Santos
Track 1 – Applications Development

In their seminal book, Accelerate, Nicole Forsgren, Jez Humble and Gene Kim gave us new insights into how to measure high performing software development teams. Two of their main metrics of high performers are: delivery lead times and number of deployments.

We will demonstrate our use of Kubernetes sandbox deployments (think: fully-encapsulated, isolated running applications) to decrease delivery lead times leading to a more rapid deployment schedule.

About Michael Sava:

Michael is a twenty plus year software engineer and application developer and technical leader, setting direction for an application development team at IBM Research focusing on application development in the age of hybrid cloud and AI.

This will be Mike's third time presenting at ITPC.

About Michael Luis Santos:

Michael is a Software Engineer at the IBM Research Apps Development Team with experience in software engineer designing, developing, testing, and delivering offerings using leading edge and/or proven technologies. Michael specializes in backend systems (databases, Elasticsearch), APIs and API Development (REST or GraphQL), cloud (containerization, Kubernetes, OpenShift) and AI.

Metaverse – Developer Perspective

By Rajiv Kewalramani
Track 2 – Security/DevOps/Agile

The objective of this presentation is to provide developers a roadmap for navigating the diverse platforms that make up the metaverse. Individuals and organizations will gain a bottoms up and a top down perspective of this new, exciting, and evolving space. It will allow them to focus on key areas relevant to their skills and interests.

For example, it will demonstrate how three.js and bablylon.js can be used to develop Web-based 3D, but then also be used with AWS Sumerian to build hosts that integrate with other AWS Services such as Polly, Kinesis, and Sagemaker. Continuing on - one can use these rendering engines to provide support for VR and AR devices via the WebXR standard.

At the end of the presentation, the audience will have an understanding of the companies (e.g., Meta, Sony, MS, NVidia, Snap, Epic, Amazon, Tokens.com, etc), their varied offerings, the associated development platforms, and how to direct their skills and interests in the metaverse.

About Rajiv Kewalramani:

Rajiv Kewalramani is a Principal Architect at **Cognizant Technology Solutions** with extensive experience in building high performance software in a variety of companies (consulting, start-up and mega-corporations). His areas of expertise include Java, Angular, DevOps, AWS and Agile Processes.

12:30 PM Women in Cybersecurity Roundtable Session

Panelists

About Rebecca Mercuri:

Rebecca Mercuri, Ph.D. is the founding President of Notable Software, Inc. where her focus is on cybersecurity, digital forensic investigations, and expert witness services. Projects have included: contested elections, criminal defense, standards and vulnerability assessments, copyrights and patents. Her Ph.D. is from the University of Pennsylvania's School of Engineering and Applied Science, where her thesis, "Electronic Vote Tabulation -- Checks and Balances" led to her being asked to submit testimony in the Bush v. Gore 2000 election controversy, and has been hailed as one of the "**Dissertation Ideas that Changed the World**."

Dr. Mercuri is well-recognized for her many decades of research and advocacy in Computer Science, and was recently recognized as a Distinguished Contributor of the IEEE Computer Society. She frequently comments on election technology and other cyber topics in her Twitter feed, **@notablemercuri**, and is a frequent author for Communications of the ACM, with links to many of her **earliest writings on voting**. Additional information about Rebecca can be found **here**.

An avid educator, Dr. Mercuri has held full-time positions at Drexel University, Bryn Mawr College, The College of New Jersey, and Drew University. She also served as a post-doctoral research fellow at Harvard University's Kennedy School of Government and the Radcliffe Institute. Currently she is the Director of the **M.O.R.E. Project**, a grant-funded IEEE initiative intended to increase the numbers of non-males and youth in amateur radio -- details on how to participate as a trainer or student may be found on the **website**.

About Isabel Wagner:

Isabel Wagner is an Associate Professor in Computer Science (Cybersecurity) at **De Montfort University** in Leicester, UK. Dr. Wagner received her Ph.D in engineering and M.Sc. in computer science from the University of Erlangen, Germany, in 2010 and 2005, respectively. She is a Senior Member of the ACM (2017) and IEEE (2018).

Her research interests are privacy and privacy-enhancing technologies, particularly metrics to quantify the effectiveness of privacy protection mechanisms and privacy-enhancing technologies in smart cities, genomics, vehicular networks, and smart grids. She is also interested in web measurement to create transparency for corporate surveillance systems.

About Jean Pawluk:

With a career in cyber security spanning over 35 years, Jean has extensive experience in the high tech, telecom, and financial industries alternating between deep technical and executive leadership roles. She has been a software and hardware developer, one of the first chief architects in Silicon Valley, a CISO several times over and is now an executive consultant and business advisor. She been recognized as an ISSA Distinguished Fellow (2014) and a Woman of Influence by SC Magazine (2015).

Jean developed an interest in security and cryptography early in her career designing several electronic funds transfer networks for the financial industry. She then went on to research and create many new telecom, network, cryptographic, payments and emerging technologies.

Jean is a speaker, college lecturer, and consultant on various emerging technologies and has been active in a number of standards working groups.

As a volunteer, she is an initial founder of the Cloud Security Alliance (2008) and continues as a contributing author to CSA guidance. She served over a decade on the ISSA Silicon Valley board and was co-founder of the ISSA Intl. Women in Security group. Jean is a co-founder of the Bace Cybersecurity Institute. She is currently on the board of the ISC2 Seattle chapter.

1:30 PM Sessions

Pattern Matching for Java

By Neha Sardana
Track 1 – Application Development

Pattern Matching is already known to Java Developers. Over time, the Java language has expanded its pattern matching capabilities from just matching strings to matching object types. The introduction of Records and Sealed Classes in previous Java versions is just part of the story.

In this talk, we will discuss the need and usage of Pattern Matching. We will uncover this feature which is going to be most helpful to developers going forward.

About Neha Sardana:

Neha Sardana is a Software Developer for Java-based applications for over a decade.

She is currently Vice President at Morgan Stanley and Java User Group Leader for the **Garden State Java User Group** in New Jersey and the **NYJavaSIG** in New York. She has worked in financial services for almost 10 years in both Europe and the US.

She is a technologist and an OSS enthusiast and loves to talk and blog about all things open source.

Bitcoin, Blockchain, Cryptocurrency Better than Gold?

By Donald Shu
Track 2 – Security/DevOps/Agile

Steve Wozniak Apple Co-Founder believes Bitcoin is better than gold. There are only 21 million Bitcoins being mined, the price is highly volatile from $17,000 to $66,000. This talk will discuss Bitcoin, Cryptocurrency, 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.

Don will provide specific examples of investing in bitcoin and other cryptocurrency.

About Donald Hsu:

Donald Hsu, PhD, is a Professor at **Dominican College**, Dissertation Chair at **University Phoenix**, and President of the **Chinese American Scholars Association** (CASA).

He trained/taught 70 subjects - Accounting to Unix 14,000+. His clients and students work at Amazon, Apple, AT&T, Bank of America, Facebook, Goldman Sachs, Google, IBM, JPMChase, Mercedes Benz, Microsoft, Morgan Stanley, New York Presbyterian, Oracle, Salesforce, Siemens, Sony, Toyota, UPS, Verizon and other Global 500 firms.

CASA ran 28 successful E-Leader conferences in Asia and Europe.

He traveled to 90 countries in Africa, Asia and Europe for international business. Don's LinkedIn profile contains 9,000+ partners/clients and 266 public recommendations.

2:30 PM Sessions

Teaching Programming via the Gradual Occam Razor

A No-Nonsense Proposal Rooted in First Principles, Common Sense and Evidence

By Enzo Alda and Jean Yazbek
Track 1 – Application Development

The advent of the information age inevitably put traditional school systems around the planet in a bind. New terms, like digital literacy and computational thinking, were coined to help form our nascent understanding of the issues. There is a lot of debate going on: we started experimenting ideas not long ago and the science is still very young, with just a few comparative studies. We have a lot to learn.

Whether, when, and how to teach programming is part of that debate. For instance, block coding and the illusion of "syntax free" programming was, and still is, touted by many as the way to teach programming. Yet, it turns out it falls short on its promise. That is just one data point in the saga. Combining the ideas of Douglas Engelbart, Stephen Wolfram, and others with our own experience, we propose and demonstrate a "natural path" to learning computational thinking and programming.

About Enzo Alda:

Enzo Alda is the founder of Lakebolt Research, a firm focused on end-user computing. He formerly held roles at technology startups and large organizations like Oracle, Bloomberg and Google. Mr. Alda conceived and implemented the engine that powers real-time calculations in the Bloomberg terminal.

Before coming to the United States, Mr. Alda was lecturing courses in compiler construction and programming language design. He holds degrees in Software Engineering, Computer Science and an MBA. Mr. Alda joined the IEEE in 1999.

About Jean Yazbek:

Jean Yazbek is a computer science senior at Simón Bolívar University. He is also a research assistant at Lakebolt Research, leading the development of the ZenSheet IDE.

Mr. Yazbek is proficient in Java, JavaScript, and many other programming languages. His main interests are database systems, language integrated queries, and reactive computing.

What Did Life Under COVID-19 Teach Us About DevOps?

By Howard Deiner
Track 1 – Applications Development

The world changed more as a result of COVID-19 than it did as a result of the September 11, 2001 attacks in the US in terms of the number of deaths and suffering of innocent people. Yet we took immediate action after the September 11 attacks and have kept up that vigilance for more than two decades. But after COVID-19, we are quickly trying to forget the misery and move on.

One radial change for many in the time of COVID-19 was mandatory shelter-in-place orders. People were forced to work remotely from their homes. We've known for decades the benefits of collocation for effectiveness in getting software development work done well. But that was no longer possible. Furthermore, as we move past the crisis, some people have learned a true life lesson. Life is tenuous, and the idea of the daily grind into the office and lack of work-life balance have made a surprising number of people say, "I quit" to their bosses. They yearn for better pay and better work-life balance, especially when they have substantial and marketable skills.

I was hopeful at the beginning of the crisis that we could take the time and make the effort to improve our collective workplaces. But I claim that we didn't. In fact, we may have made them worse than ever. This talk will explore what we did wrong, and how we could have done better. But just because we missed the ball the first time around doesn't mean that it's too late to improve for the future. Let's discuss how.

About Howard Deiner:

Howard is a software consultant and educator who specializes in Agile process and practices. He has a varied background spanning well over forty years in the industry, with extensive experience in commercial software, aerospace, and financial services.

He has played many of the roles in the development arena, such as developer, analyst, team lead, architect, and project manager. He has applied the principles of Agile, Lean, and XP development in teams both large and small, in various environments.

Howard has educated dozens of teams, and is a long-standing member of the ACM and IEEE. He currently serves as chair of the Responsible Subcommittee of the IEEE Computer Society Artificial Intelligence Standards Committee.

3:30 PM Sessions

Algebraic Data Types in Java

By Chandra Guntur
Track 1 – Applications Development

This session covers Tuples, Records and Sealed Classes. Attendees can code along/download the "kata" with failing tests that need to be fixed with the provided hints. The session focuses on a live demonstration of a few tests being fixed to learn about Algebraic data types in Java.

Chandra will provide code samples and a walkthrough of the algebraic data types and their uses. Java 14 introduced Records and Java 15 introduced Sealed types. Understanding the nuances and benefits of these algebraic data types as well as leveraging other similar sum and product types via code is intended to help the attendees better use the amazing new features being introduced.

About Chandra Guntur:

Chandra Guntur is a technologist in the financial services industry since 2003 and is programming with Java since 1998.

Chandra was selected as Java Champion in March 2019. He is a Java User Group (JUG) Leader, and helps run one of the largest Java user groups, **NYJavaSIG**, and a founder-leader at the **Garden State JUG**.

Chandra conducts code workshops and Code Katas on core Java features. He is a frequent speaker at Java user groups, and technology conferences including **Oracle CodeOne**, Oracle Code NY, **QCon New York**, **Devnexus**, DawsCon and GIDS India.

Chandra holds a Bachelor's degree in Technology, Electrical and Electronics Engineering from Sri Venkateswara University.

Privacy Law Update

By Fred Wilf and Josh Waterston
Track 2 – Security/DevOps/Agile

Privacy law continues to evolve as recently-passed legislation in California has led to new regulations and the creation of a privacy-specific agency in California, i.e., the **California Privacy Protection Agency**. Other states are following California's lead by passing new laws and regulations, all while Congress considers whether or not it wants legislate in this field.

The focus of this talk is recent changes in privacy law and what they mean to IT people working in the field and to the general public.

About Fred Wilf:

Fred Wilf is the managing partner of **Wilftek LLC**, a technology and intellectual property law firm.

Fred has been working with the information technology industry for over 30 years, and is a long-term contributor to the **Trenton Computer Festival**.

About Josh Waterston:

Josh Waterston is of counsel to Wilftek LLC, where he practices privacy law as part of his larger practice in technology and intellectual property law. Josh has over 20 years of experience as an attorney.