

# Gennaro De Luca

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## Education

### Arizona State University

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|-----------------------------------|----------|
| Ph.D. Computer Science, GPA 3.85  | May 2020 |
| M.C.S. Computer Science, GPA 3.84 | May 2019 |
| B.S. Computer Science, GPA 4.0    | May 2016 |

Barrett, the Honors College student

## Publications

- Gennaro De Luca, “Explainable AI for Workflow Development and Verification Using Pi-Calculus,” Arizona State University, Tempe, USA, 2020.
- Chen, Qiang & Chen, Yinong & Zhu, Jinhui & De Luca, Gennaro & Zhang, Mei & Guo, Ying. (2020). Traffic light and moving object detection for a guide-dog robot. *The Journal of Engineering*. 2020. 10.1049/joe.2019.1137.
- Gennaro De Luca and Yinong Chen, “Semantic Analysis of Concurrent Computing in Decentralized IoT and Robotics Applications,” 2019 IEEE Fourteenth International Symposium on Autonomous Decentralized Systems, Utrecht, the Netherlands, pp. 95-102, March 2019.
- Gennaro De Luca, Zhongtao Li, Sami Mian, Yinong Chen: "Internet of Things and Intelligent Devices and Services", *CAAI Transactions on Intelligence Technology*, Volume 3, Issue 2, June 2018, p. 119 – 130.
- Yinong Chen, Gennaro De Luca: "Technologies for Developing a Smart City in Computational Thinking", *International Journal of Simulation and Process Modelling (IJSPM)*, Vol. 13, No. 2, 2018, pp. 91 - 101.
- Yinong Chen and Gennaro De Luca, Robot as a Service and Its Visual Programming Environment, in book: *Autonomous Decentralized Systems and their Applications in Transport and Infrastructure*, pp. 181 –199. IET Digital Library, edited by Kinji Mori, 2018.
- Gennaro De Luca and Yinong Chen, “Visual IoT/Robotics Programming Language in Pi-Calculus”, 2017 IEEE Thirteenth International Symposium on Autonomous Decentralized Systems: pp. 23-30, 2017.
- Yinong Chen, Gennaro De Luca: "VIPLE: Visual IoT/Robotics Programming Language Environment for Computer Science Education", *IPDPS Workshops 2016*: 963-971.

## Work Experience

### Information Technology Instructor

Summer 2020-Present

*TPS, Arizona State University*

- Taught various programming and IT courses, including IFT101 Python, IFT210 Java, IFT370 Mobile Apps, IFT401 Capstone 1, and IFT402 Capstone 2.
- Served as chair of hiring committee for new lecturer position in Spring 2021.
- Developed new Mobile Apps course (IFT370) and piloted the course.

## **Course Revision Faculty**

**Summer 2020**

*CIDSE and EdPlus, Arizona State University*

- Served as faculty member to update CSE 539 Online (Applied Cryptography)
- Designed new projects and assessments
- Participated in rigorous reviews and performed revisions for each part
- Designed practice exams with feedback aimed at helping students learn
- Implemented Docker-based Coursera autograders for each project

## **Teaching Assistant-Instructor**

**2016-2020**

*CIDSE, Arizona State University*

- CSE 539 Hybrid (Applied Cryptography): Spring 2020
- CSE 539 Online (Applied Cryptography): Fall 2019, Spring 2020
- CSE 511 Online (Data Processing at Scale): Spring 2019
- FSE 100 (Introduction to Engineering): Fall 2016 – Fall 2018 (five semesters)
- CSE 486 (Computer Science Capstone): Spring 2018, Spring 2020
- ASU Summer Robotics Camps: Summer 2017, 2018, 2019

## **Teaching Assistant**

**2014-2016**

*CIDSE, Arizona State University*

- CSE 220 (Programming Languages for Engineering)
- CSE 240 (Introduction to Programming Languages)
- CSE 445 (Distributed Software Development)
- CSE 446 (Software Integration and Engineering)

## **Projects**

### **VIPLE (Visual IoT/Robotics Programming Language Environment)**

A workflow, service-oriented programming language for IoT/Robotics application development in education.

- Main developer. Developed in C# with WPF. Employs REST and SOAP services.
- Supports open platform robots as a result of the JSON interface and Wi-Fi and Bluetooth connection support.
- Has been used in courses at ASU and other universities worldwide.
- Published several papers on VIPLE as well as a textbook to enable other universities to employ VIPLE.

### **Explainable Semantic Autograder (Dissertation Topic)**

An autograder based on the concept of automated theorem proving to support semantic autograding of VIPLE programs. Provides feedback to enable students to learn without a TA.

- Developed mathematical framework to enable analysis of VIPLE programs using Pi-Calculus and Hoare Logic.
- Created machine learning application to enable self-learning of rules. These rules define correctness of autograded VIPLE projects.

- Employed reasoning framework to introduce explainability into the system. When learning rules or performing grading, human understandable feedback is included.

### **Autograders for MCS Courses**

Developed autograders for the MCS online version of ASU's CSE539 (Applied Cryptography).

- Developed Docker autograders for use on Coursera. Includes support for 5 projects.
- Piloted the first run of this course with the new autograders. The autograders fully eliminated the need for human grading of these projects.
- Acted as consultant for other MCS online course developers at ASU.

### **Competitions and Awards**

- Intel Cup Embedded System Undergraduate competition, July 2018, Shanghai: Adviser of the First Prize Winner team from ASU
- Intel Cup Embedded System Undergraduate competition, July 2016, Shanghai: First Prize Winner
- Intel Cornell Cup, May 2016: Finalist
- Microsoft Imagine Cup March 2016, San Francisco: Finalist (top five)
- The Intel® IoT Roadshow Hackathon competition 2015, Los Angeles: won second prize