Vincent **Pacelli**

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AT A GLANCE

Interested in work and research in robotic and cyber-physical systems.

EDUCATION

UNIVERSITY OF PENNSYLVANIA

MASTER OF SCIENCE IN ENGINEERING, ROBOTICS | 2017
Cumulative GPA: 4.0
BACHELOR OF SCIENCE IN ENGINEERING, ELECTRICAL ENGINEERING | 2016
Cumulative GPA: 3.38

COURSE WORK

COMPUTER SCIENCE

Computational Learning Theory, Algorithms and Data Structures II, Operating Systems, Computer Architecture, Theory of Embedded Computation, Math. Foundations of Comp. Sci.

ELECTRICAL ENGINEERING

Analog Circuits III, Digital Logic, Embedded Systems

SYSTEMS ENGINEERING

Control Theory, Linear Systems, Dynamical Systems, Probability, Stochastic Processes

LANGUAGES / TOOLS

SOFTWARE

C/C++, Python, MATLAB, ArduPilot
LaTeX, HTML/CSS/JS, C#, Linux, Java, Mathematica, Haskell, Git, Swift

HARDWARE

EagleCAD, AVR and ARM microcontrollers, Xilinx FPGAs, SPICE and Multisim

TEACHING ASSISTANT

- Embedded Systems
- Digital Logic & FPGAs
- Digital Audio

WORK EXPERIENCE

NASA LANGLEY | SAFETY-CRITICAL AVIONICS BRANCH
Summer 2015
- Developed mission planner (detailed below) as part of a research thrust to create a safety-verified Unmanned Air Vehicle (UAV) platform.
- Currently writing a branch white paper detailing the methods used in the project. Will be made publicly available on completion.

SUNFEST REU | UNIVERSITY OF PENNSYLVANIA
Summer 2014
- Worked on the embedded software and data analysis tool suite for use with the NeoNur detailed below.
- Helped develop a tool used by medical researchers in hospitals.

PROJECTS

ASURA: AUTONOMOUS UAVS FOR FIRST RESPONDERS
- A multi-agent UAV system for disaster assessment developed as senior design project in collaboration with Penn's GRASP Lab.
- Utilizes both "correct-by-construction" mission synthesis to prevent dangerous human-made flight plans and thermal computer vision to identify points of interest.
- Computer vision algorithms used to identify targets of interest via thermal imaging.

AUTONOMOUS UAV MISSION PLANNER
- Prototyped and developed decision making algorithms for application in autonomous UAVs.
- Leveraged Bayesian methods, parallel computing, and interruptible computation to improve efficiency and meet real-time constraints.
- Implemented on an ARM microcontroller running Real-Time Linux. Tested using Hardware-in-the-Loop techniques.
- Developed technical communication skills through giving branch presentations and producing technical papers and documentation.

NEONUR: PRACTICAL INFANT FEEDING CHARACTERISTICS
- A tool for medical researchers studying how infants develop oral motor skills.
- Developed software for uploading and analyzing sensor data using signal processing techniques.
- Refined design through feedback from users.

SMART BLOCKS
- Developed embedded software and electronics prototypes for low-cost, context-aware building blocks with emphasis placed on user experience.
- The intelligent building base is aware of the structure assembled on it. Other smart living room devices are made aware of this structure to provide further interaction.
- Product success required designing a system that fit tight space, computational, and cost contraints.
- Software written in C++ for AVR microcontrollers. PCBs were designed in EagleCAD.