

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,
ROBOTICS | 2017

BACHELOR OF SCIENCE,
ELECTRICAL ENGINEERING | 2016
Cum. GPA: 3.38

COURSE WORK

COMPUTER SCIENCE

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

TECHNICAL SKILLS

C/C++, Python, MATLAB, ArduPilot
LaTeX, HTML/CSS/JS, C#, EagleCAD, Linux,
Java, AVR and ARM microcontrollers,
Mathematica, Haskell, Git, Xilinx FPGAs,
Swift, SPICE

TEACHING ASSISTANT

- Embedded Systems
- Digital Logic

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.
- Features both "correct-by-construction" mission synthesis to prevent dangerous human-made flight plans and thermal computer vision to identify points of interest.

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.

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.
- 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.
- Software written in C++ for AVR microcontrollers. PCBs were designed in EagleCAD.