Audrow Nash

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Education

08/15 - present **University of Michigan (U-M)**, *Ann Arbor*, Michigan, USA.
Master of Science in Electrical and Computer Engineering with expected graduation in May 2017
GPA: 3.5/4.0
Courses: Linear systems, robotic systems lab, computer vision, dynamics, machine learning

08/10 – 12/14 **University of North Carolina at Charlotte (UNCC)**, *Charlotte*, North Carolina, USA.
Bachelor of Science in Electrical Engineering
GPA: 3.5/4.0
Courses: Engineering simulation, embedded system design, sensors and actuators

Awards and Scholarships

2016 **National Science Foundation (NSF) Graduate Fellowship**.

2013 **Charlotte Research Scholars Fellowship**.

Skills

Programming *Competent* in Common Lisp, *C/C++*, Python, Matlab; *Familiar* with Mathematica, Bash.

Software *Competent* with Linux/Unix systems, GIT, LaTeX, GDB; *Familiar* with AutoDesk, LCM.

Hardware *Competent* with oscilloscope, multimeter, 3D printers, laser-cutter, CNC machine, soldering iron; *Familiar* with motion-capture systems, reflow soldering oven, casting silicone.

Experience

05/15 – present **Research Assistant**, *U-M*, Ann Arbor, Michigan, USA.
Currently, I am working to implement a dynamic rigid body simulator that uses time-stepping to avoid numerical paradoxes. The simulator will be used to generate controllers for efficient walking gait for a bipedal robot. Efficient gaits will be tested on physical robot. Findings from the bipedal robot will be used to improve control of assistive lower-body exoskeletons. The simulator will be written in *Matlab* with key components in *C*.

Previously, I worked on a method for fast object-detection on an embedded microcontroller using a far-infrared thermal camera. The image was recursively decimated and, starting from the smallest image, working to the largest image, a search space developed for object detection using various statistics. This project was in *C*.

01/16 – present **Founder and Programmer**, *Janus*.
After years analyzing my personal data to improve my productivity and happiness, I created Janus: a tool for changing behavior. A user inputs data directly through surveys or imports data of all kinds from other services (sleep, fitness, health, time usage, happiness, etc.) and that data is analyzed. Currently, correlation is performed at various timescales and with various time shifts. Eventually, machine learning and optimization will be used to make predictions and recommendations. Janus is written in *Common Lisp*. A public prototype will be available in late 2016.

- Built an international (in USA and Russia) team of programmers and advisers. Currently, there are three contributing programmers and one adviser.
- Developed a business plan and stakeholder model after receiving interest from venture capitalists.

02/15 – 08/15 **Intern**, *senseFly*, Cheseaux-Lausanne, Vaud, Switzerland.

- Designed and implemented a scale- and rotation-invariant object recognition system for drones to detect a landing pad. Used FAST detector and descriptor, SIFT-like octals for scale-invariance, and vector correlation to match features. Implemented without existing libraries to meet our specific needs.
- Implemented an algorithm to solve for a camera's intrinsic parameters; the obtained camera model was used to relate different cameras position and for visual SLAM. (My implementation was used for calibration in mass production.)

05/13 – 12/14 **Research Assistant**, *UNCC*, Charlotte, North Carolina.

- Worked towards having quadrotors establish and hold a formation (using only on-board sensing and processing); planned algorithm, picked out hardware, implemented. (Successfully implemented on quadrotors by my teammates after I graduated from UNCC.)
- Led team with three graduate students (while an undergraduate) (01/14 – 12/14).
- Presented research several times, including at the ICINCO conference in Vienna, Austria.

09/11 – 10/12 **Co-Founder and Partner**, *Sortastitious Longboards*, Charlotte, North Carolina.

I co-founded a company manufacturing and selling longboards (cruising skateboards). We were novel because we embedded electronics (hall effect sensor, IMU, LEDs, etc.) into longboards. I sold my part of the company to the other co-founder to focus on my studies. Profits surpassed expenses.

Extracurricular Activities

03/14 – present **President and Interviewer**, *Robots Podcast*.

- Leader of international team (in USA, Australia, Japan, UK, Sweden, Russia). Streamlined, built in redundancy, and delegated the podcast publication pipeline. Created a tree-structure apprenticeship system for training new interviewers.
- Funded to attend international conferences several times a year (twice in 2015, three times in 2016). Established relationship with and was funded by Skolkovo and the Russian government to attend IASP 2016 conference in Moscow, Russia.
- Conducted 80+ interviews with leaders in robotics for *Robots Podcast* (1,800 global subscribers), which are featured on *Robohub* (85,000 unique monthly visitors).

06/16 – present **Volunteer**, *Glacier Hills Senior Living Community*, Ann Arbor, Michigan, USA.

I volunteer two hours each Sunday in *Eva's House*: a home for those with neurodegenerative diseases. Much of what I do is focused on my success and advancement; this is a way to give back.

08/11 – 10/12 **President and Chapter Founder**, *National Society of Leadership and Success*, Charlotte, North Carolina, USA.

I founded a chapter of a leadership and honor society that grew to approximately 1,000 members while I was president. Around a dozen times each semester I directed events with over 100 people; these often involved participation. To build an eight person executive board, I devised a way for members to apply online and interviewed the top applicants.

Publications

09/14 **ICINCO**, Towards Establishing and Maintaining Autonomous Quadrotor Formations. (first author)

03/14 **IEEE SoutheastCon.**, Establishing and Maintaining Formations of Mini Quadrotors. (first author)