



# Hani Awni

## Neuroengineer & Computer Engineer

### Education

- 2015–2017 **BS: Electrical Engineering**, *Univ. of Illinois*, Urbana, IL, *GPA – 3.8*.  
Focused on control theory, biomechanics, and robotics.
- 2009–2013 **BS: Brain-Machine Interfacing (CS)**, *Univ. of Illinois*, Urbana, IL, *GPA – 3.2*.  
Expanded computer science major with deep background in cognitive science, neuroscience, and signal processing. Third custom degree ever awarded by Engineering College.

### Classes

- 2015-16 Control Theory, State Space Control, Neuromuscular Modeling, Embedded Systems, Biomedical Imaging, Electromagnetic Field Emission & Transmission
- 2009-13 Program Verification, Neural Network Modeling, Cognitive Psychology, EEG Experiment Design, Computational Neuroethology, Machine Learning, Database Systems

### Publications

- Title *Towards A Brain Computer Interface Based on the N2PC Event Related Potential*.  
Authors Hani Awni, J. Norton, S. Umunna, Dr. K. Federmeier, and Dr. T. Bretl.  
Description Demonstrates feasibility of an EEG-driven BCI of my own design, based on the heretofore unused N2pc event related potential. Unlike the more common P300Spellers or SSVEP-Spellers, this BCI does not involve a flashing interface, thus improving comfort for extended use. Presented at IEEE EMBS NER 2013.
- Title *Analogical Reasoning May Explain Racists Calling Idris Alba “Too Street”*.  
Authors Hani Awni, S. Wilner, Dr. J. Hummel.  
Description Demonstrates that pure analogical reasoning, as implemented in LISA, a neural-network model of human abstract relational reasoning, is sufficient to cause disbelief in a hypothetical African-American Bond after exposure to numerous James Bond film plots. Currently being submitted.

### Experience

#### Vocational

- 05/2016– **EEG Data Analyst**, DAQRI, Los Angeles.
- 08/2016
  - Record, analyze and interpret EEG data using Python’s SciPy library.
  - Focus on state quantification during both sleep and attention tasks.

- 01/2014– **Independent Neuroengineer & House Captain**, SELF-EMPLOYED, San Francisco, CA.  
05/2015
- Worked on myriad neuroengineering projects, including Moodband, a wearable for EEG-based emotional state visualization; ley\*, a MFQ-scheduler-inspired to-do system; Respectable, a social-graph analysis tool; an Abalone AI competition; and NOS, a generalized BCI in collaboration with Randal Koene.
  - Self-taught and took online courses in chaos, complexity theory, and medical neuroscience.
  - Researched possible BCIs and wearables, especially in the contexts of potential game designs, mental health, biological robots, and behavioral reinforcement.
  - Helped direct the setup and growth of a 25-person intentional community focused in interdisciplinary intellectual interchange in San Francisco.
  - Resolved or mediated inter-resident conflicts with an eye toward the overarching goal of the community.
- 05/2013– **Software Developer**, PALANTIR TECHNOLOGIES, Palo Alto, CA.  
12/2013
- Expanded and maintained web interface in Javascript (Typescript and Coffeescript), and Java.
  - Designed, developed, and implemented additional features to core product in Java Swing.
- 05/2010– **Engineering Camp Counselor**, WYSE SUMMER CAMP, Urbana, IL.  
08/2010
- Managed groups of 20-30 High School seniors and juniors through multiple presentations of different engineering majors
  - Led groups on campus tours, gave extensive advice on adapting to college life, and concretized realities of college freedoms
  - Taught high schoolers through a weeklong programming project in Lego Mindstorms to create robots that navigated an obstacle course.
- 05/2008– **Database Architect Intern**, BAXTER CREDIT UNION, Vernon Hills, IL.  
08/2011
- Designed, coordinated, and implemented expansions to database processing capability.
  - Collaborated with non-technical employees throughout the company to clarify the aims of various projects and subsequently implemented projects according to their specifications.
  - Trained and led team of new interns in T-SQL programming on several database-improvement projects.
- Lab Experience**
- 01/2011– **Experiment Designer/Researcher**, DR. HUMMEL'S COGNITIVE MODELING  
05/2013, LAB, Urbana, IL.
- 05/2015– **Present**
- Expanded LISA model of human abstract reasoning to better reason about complex situations and develop doubt in hypothetical situations.
  - Demonstrated an algorithmic basis for racism due to inexperience based on the LISA model.
  - Developed new interface for LISA to interact with semiautomatic theorem provers like Coq in pursuit of fully automated code generation.
  - Designed & implemented experiment interfaces to best test working theories of relational visual perception.
  - Aided psychology Phd. students in coding data analysis and results interpretation in light of relevant theories.
- 08/2012– **BCI Researcher**, DR. BRETEL'S APPLIED CONTROLS LAB, Urbana, IL.  
05/2013
- Researched and implemented novel EEG-based Brain-Computer Interface, the N2PCSpeller.
  - Recruited and ran subjects to collect data to test and optimize N2PCSpeller.

01/2010– **Lab Technician and Analyst**, DR. FEDERMEIER'S NEUROLINGUISTICS LAB,  
05/2012 Urbana, IL.

- Assisted graduate students both with writing experiment code and with data mining of ERP results despite abundance of noise and artifacts.
- Aided in setup and running of subjects in EEG experiments, enabling high subject throughput.
- Ensured a comfortable atmosphere for test subjects despite otherwise abnormal circumstances.
- Taught new research assistants and graduate students efficient procedures in use of lab equipment.

## Leadership and Membership

Founder SIGNeuro

Member ACM, IEEE, Undergraduate Neuroscience Society, BioMedical Engineering Society

High School WYSE(Captain), JETS(Captain), Science Bowl(Captain), Math Team(President)

## Skills

Basics L<sup>A</sup>T<sub>E</sub>X, Windows, Mac OSX, Linux, Unity Engine, Office Suite

Programming PYTHON, C, JAVASCRIPT, SQL, JAVA, C++, OCAML, NETLOGO

Languages English (native tongue), Spanish (intermediate)

## Interests

- Artificial Intelligence
- Social Justice
- Biosimilar Robotics
- Game Design
- Modern Internet Communities
- Animal Intelligence
- Interdisciplinarianism
- Biomechanics
- Atypicality