Alex Patin

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Education

Pennsylvania State University Class of 2018: B.S. Computer Science, Mathematics Minor **Major GPA:** (3.81/4.00)
Relevant Courses: Data Structures & Algorithms, Systems Programming, OOP (Java), Discrete Math, Comp Org & Design

Work Experience

Musical Minds: *Founder, CEO, CTO* **November 2015 - Present**

- Directed a team in the creation of a wellness-based music recommendation engine powered by brainwave-sensing headphones
- Outlined testing protocols, Agile-based milestones, a business plan, and research procedures with team members and advisors
- Garnered funding through several grants, awards, and competitions
- Designed collaborative filtering models and EEG signal classifier models to relate positive neural responses to certain song traits
- Created iOS, and Android SDKs for connecting with ASIC-based EEG sensors through Bluetooth

Microsoft: *Student Partner* **August 2015 - Present**

- Organized 8 workshops for college students on developer tools including OpenCV, Kinect, Azure, Android, Microsoft Band, etc.
- Represented Microsoft as a sponsor at 2 Health Hackathons to promote the Microsoft Band with related workshops
- Volunteered at middle and high schools to teach programming concepts through Kinect programming

Progeny Systems: *Software Engineering Intern* **May 2015 - August 2015**

- Programmed web-scraping software in Python for collection of images and associated data from Facebook
- Implemented scraping software on Amazon EC-2 instances to acquire a 3,000,000+ person dataset
- Designed an interactive GUI in Java to represent facial feature similarity adjacency matrices visualized using t-SNE for clustering

Projects

Lunar Lion (First Collegiate Lunar Lander)**:** *Guidance, Navigation, and Controls Lead Engineer* **January 2016 – May 2016**

- Directed 35 students in the development of five software/hardware subsystems including flight software, ground controls, modelling and controls, systems testing, and visual guidance
- Interfaced the craft's health monitoring, navigational, and communication sensors with C/C++/Python software using Arduinos and RTD controllers running Linux

Lunar Lion: *Visual Guidance System Lead Engineer* **April 2015 – January 2016**

- Pioneered first 3D topographical reconstruction system to use a single camera with OpenCV in C++
- Implemented a spline interpolation algorithm using parallax models from trackable objects on the lunar surface
- Applied topographical reconstruction system to risk analysis algorithm for landing sequence adjustments

Intelli-DJ: *Team Leader and Developer* **November 2015**

- Spearheaded research on using neural networks to identify emotions using polygraph readings
- Designed Android app with the Spotify SDK and API to use Microsoft Band 2 sensors as a modified polygraph for reinforcement learning of a user's taste in music based on their current physical state

Lysdexia: *Team Leader and Developer* **March 2015**

- Spearheaded research on common treatment methods for dyslexia and other literacy impairments in children
- Designed 4 interactive Xbox Kinect minigames each designed to improve specific literacy skills

Awards and Achievements

- **PennTap Learning Factory Grant Recipient** **August 2016**
- **Slavin Fellow** **July 2016**
- **Whitman Endowment Recipeint** **May 2016**
- **Penn State Erickson Grant Recipient** **April 2016**
- **1st Place at HackPSU -** Intelli-DJ **November 2015**
- **Penn State Engaged Scholarship Award** **November 2015**
- **Leonard Center Speech Contest for Engineers Semifinalist –** Harnessing DNA for Digital Storage **April 2015**

Software Skills

Languages: C **/** C++ **/** C# **/** Objective-C, Java, Python, Swift, Javascript **/** Node.js, HTML, CSS
Frameworks/Platforms/Libraries: Azure, AWS, .NET, REST, OpenCV, GraphStream, TensorFlow, Numpy, SciKit, Selenium/BeautifulSoup
Algorithmic Proficiencies: FFT, t-SNE, Neural Nets, Reinforcement Learning, Spline Interpolation, Kalman Filtering, Web Scraping