Alex Patin

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Education

Pennsylvania State University Class of 2018: B.S. Computer Science **Major GPA:** (3.89/4.00)
Minors: Mathematics, Music Technology
Relevant Courses: Data Structures & Algorithms, Systems Programming, OOP (Java), Discrete Math, Computer Organization & Design

Work Experience

Musical Minds: *CEO, Founder, Software Developer* **December 2015 - Present**

- Directed 12 employees in the development of Brain-Computer Interface headphones for applications with music therapy
- Created Windows, iOS, and Android SDKs for interfacing with ASIC modules and EEG sensors through Bluetooth
- Designed reinforcement learning models to relate EEG feedback to Spotify/EchoNest API results for optimized therapy sessions
- Participated in the filming of a documentary on music therapy vs anti-psychotic drugs for dementia treatment

Lunar Lion - First Collegiate Lunar Lander**:** *Guidance, Navigation, and Controls Lead Engineer* **January 2016 - Present**

- Directed 65 students in the development of six software/hardware subsystems including visual guidance, flight software, ground controls, communications, modelling and controls, and systems testing
- Interfaced the craft's health monitoring, navigational, and communication sensors with C/Python software using Arduinos and RTD controllers running Linux

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

- Organized 6 workshops for college students on developer tools including OpenCV, Kinect, Azure, Android, Microsoft Band, etc.
- Represented Microsoft at Health Hackathons in Pittsburgh and Philadelphia and taught developers to use the Microsoft Band
- Volunteered at middle and high schools to teach programming concepts through Kinect and Minecraft programming

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

- Programmed 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 a GUI in Java to represent facial feature adjacency matrices visualized using t-SNE dimensional reduction

Projects

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

- Pioneered first 3D topographical reconstruction system to use a single camera with OpenCV in C++
- Authored an original research on the mathematics and optics involved
- Applied topographical approximation 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* **April 2015**

- Lead research efforts on common treatment methods for dyslexia and other literacy impairments
- Created 4 interactive Xbox Kinect "mini-games" each designed to improve specific literacy skills

Awards and Achievements

- **Penn State Engaged Scholarship Award** **November 2015**
- **1st Place at HackPSU -** Intelli-DJ **November 2015**
- **Leonard Center Speech Contest for Engineers Semifinalist –** Harnessing DNA for Digital Storage **April 2015**
- **6th Place at CodePSU (ICPC Competition) -** Advanced Tier **March 2015**
- **American Math Competition Senior Champion** **June 2014**

Software Skills

Languages: C/C++/C#/Objective-C, Java, Python, Swift, HTML
Frameworks and Platforms: Azure, AWS, .NET, Restful API's, Accord.NET, React Native
Environments/Tools: Visual Studio, Anaconda, JetBrains, Xamarin Studio, XCode, Vim, Bash, Git, VirtualBox, Arduino, Raspberry Pi
Operating Systems: Windows, Linux, Mac, Android, iOS, Raspbian
Algorithms: FFT, t-SNE, CNN's, Reinforcement Learning, Spline Interpolation, Dijkstra, Kalman/LMS Adaptive Filtering