PATRICK ABINEY
LinkedIn 321 368 2103 patrickabiney@gmail.com

SUMMARY

- Experience in analysis, software design, development, coding, & testing for applications, websites, games, & robots.
- **Expertise in C++ & Engine Development.**
- Fluent in **C++, C, C#, Python, x86, Java, HLSL, GLSL, JavaScript, T-SQL, HTML, CSS, XML**.
- Familiarity using **debugging techniques** & **technologies**.
- Background in **Classical Artificial Intelligence** techniques like flocking, A* pathfinding, object avoidance, & states.
- Experience in multiple facets of **Machine Learning** including **Collaborative Filtering**, **Decision Trees**, **Support Vector Machines**, **Neural Networks**, **K-Nearest Neighbor**, **Perceptron**, **Gaussian Mixture Models**, & **Boosting**.
- Familiarity with various models & training techniques for **Neural Networks** including **Highway**, **Recurrent Neural Network**, **Convolutional Neural Network**, **Deep Neural Networks**, **Long Short Term Memory**.
- Knowledge of GPU & CPU functionality for code **optimization**.
- Ability to use optimization technologies & techniques like **instancing**, **LOD**, **multithreading**, **SIMD**, & **static memory**.
- Experience with **profilers** such as Intel Parallel Studio.
- Skills in calculus, linear algebra, physics, bitwise operations, algorithm optimization, matrix manipulation, geometry, lagrangian dynamics, inverse kinematics, degrees of freedom, & collision algorithms.
- Solid understanding of designing applications & **class diagrams,** using **Object Oriented Design Patterns**, & creating **UML** diagrams with **Use Cases**.
- Participation in end-to-end **Scrum SDLC** & interacting with business users.
- Knowledge of various design architectures including **Singleton** & **Factory** architectures.
- Experience writing documentation such as **Rough Order Magnitude**, **Software Design Document**, **Software Requirements Specification**, & **Game Bible**.
- Contributing an exceptional ability to work under pressure & deliver innovative improvement strategies to meet deadlines & objectives.
- Punctual, hard-working, knowledgeable, motivated developer.
- Focus, initiative, innovative design, dedication, & outstanding mathematics skills.

INDUSTRY SKILLS

App Program Interfaces**:**	Direct X, OpenCV, OpenGL, OpenGL ES, FMOD 3, Winsock, Maya, 3Ds Max, SFML, Android, ROS, TensorFlow, Scikit-learn, Baxter
Languages:	C++, C, C#, Java, HLSL, GLSL, JavaScript, T-SQL, HTML, CSS, XML, x86 Assembly, Ruby, XSLT, CAML, Python, YAML
Development Tools:	Visual Studio 2010 & 2012, SVN, Hansoft, Perforce, Tortoise GIT, Google Code, Team Foundation Server, Photoshop, GIMP, Fiddler, Intel Parallel Studio, Android Studio, Sublime, GIT, RVIZ
Databases:	SQL Server, SQL Server Express
Frameworks:	ADO.NET, LINQ, Entity Framework, Web Services, SOA, WCF, Windows Workflow, jQuery, jQuery UI, AJAX, AJAX Control Toolkit, .NET Framework 3.5 & 4.0, TFLearn
Content Management:	Tridion, SharePoint 2007, 2010, & 2013
Game Engines:	Unity, Unreal

EDUCATION

Master of Science in Robotics **Sep 2016 - Dec 2017**
Northwestern University Evanston, IL
Bachelor of Science in Game Development **Aug 2011 - Jun 2013**
Full Sail University Winter Park, FL

EMPLOYMENT

Human Head Studios **Jul 2015 - May 2016**
Gameplay Technology Programmer Madison, WI
Harris Corporation **Dec 2013 - Dec 2014**
SharePoint Developer Melbourne, FL

PROJECTS

Pirate Battle Arena **Jul 2015 - Feb 2016**
An Unreal Engine 4 game prototype & proof of concept. Players would play as a pirate ship in a sea-based battle arena.

- Implemented **flocking** behaviors for sea life.
- Added **obstacle avoidance** to enemy AI & sea life.
- Created **multi-actor state-based boss AI** that would iterate through **stages** based on health, becoming more violent.
- Worked with blending between animations & **ragdoll physics**.
- Added **GPU accelerated particles** that would iterate through bones in a skeletal mesh for spawning.
- Communicated with artists, designers, & programmers to meet deadlines.

Technologies Used: Unreal Engine 4, Microsoft Visual Studio 2013, Perforce, Amazon Web Services, WWise, Jenkins.

Field Service Group Vehicle Tracker **Jul 2014 - Dec 2014**
A SharePoint 2007 front end site with a SQL back end. Technicians could submit their vehicle reports & administrators could approve or deny them.

- Made SharePoint list to act as repository for vehicle reports.
- Used **jQuery** to call SQL Web Service, modify list **CSS**.
- Enabled **versioning** to backup reports.
- Created **ROM** & **3-Point** estimates.
- Worked closely with customer to **meet ever changing demands**.
- Established **groups** for the managing of **permissions**.

Technologies Used: Microsoft SharePoint 2007, SharePoint Designer 2007, Web Parts, JavaScript, jQuery, SPServices, Fiddler.

UnNatural Selection **Jan 2013 - May 2013**
A 3D Hack-n-Slash game built on a custom engine. A single player plays as one of several woodland creatures that battles others in a fantasy forest arena.

- **Team Lead** skills including team **management** & **liaison to producers**.
- Successfully implemented **hardware accelerated** smooth skinning animations.
- Made **GLSL** shaders for directional diffuse light cell shading, normal mapping, UV scrolling, multi-texturing, cell animation, glow mapping, dissolve, edge detection, bloom, motion blur.
- Developed random generation system for arena using matrix manipulation.
- Used **FMOD 3** to manipulate sound speed, volume, panning, & ducking. Created channel based system to cap sound effect frequency, & used listener functionality for 3D sound effects.

Technologies Used: Visual Studio 2010, Perforce, Tortoise GIT, C++, GLSL, FMOD 3, OpenGL, Hansoft, PhotoShop.