

# Paul Schwarzwald

## Software Engineer

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### PROFILE

- **Engine Programmer**
- **Rapid Prototyping**
- **Fast Learner**
- **Hard Worker**
- **Ship on Time**

### PROGRAMMING SKILLS

**Languages:** C/C++, C#, Java, Python, SQL, GLSL, basic Ruby  
**Networking:** Unity Networking, TCP/IP and UDP using WinSock API, network debugging, node.js  
**Engine areas:** Architecture, data serialization, reflection, property editors, archetype, level editors  
**Math:** Linear algebra, vectors, matrices, discrete mathematics, quaternions, fuzzy logic  
**AI:** A\* pathfinding, finite-state machines, constraint satisfaction, inference engines, evolution strategies

### GAME PROJECTS

#### Pixie Dust

**Technical Artist / Gameplay Programmer**

**1/16 – 4/16**

2.5D Platformer with a teleport mechanic, in Unity (team of 8)

- Imported models, sprites, animations, and textures into Unity
- Created animation state machines
- Adapted existing game logic to match animations
- Created camera with smooth motion and panning capabilities
- Removed hard-coded values and parameterized many existing scripts to allow designers to easily adjust behavior
- Created a search tool to allow designers to find environment objects which meet required parameters

#### Card Tactics

**Lead Programmer / Network Programmer**

**1/15 – 4/15**

3D tactical deck builder, in Unity (team of 2-3)

- Used pathfinding to highlight the area a unit could move
- Created map which dynamically updated itself in the Unity Editor
- Gameplay programming (combat, card interaction with hand/deck/discards, turn rotation)
- Network programming (synchronize state between players using RPCs, server browser)
- UI programming (cards, highlighting selectable, player colors, dynamic borders, health indicators)

#### Alien City Rampage

**Engine Programmer / Gameplay Programmer / UI Programmer**

**9/12 – 4/13**

2D top down rogue-lite dungeon crawler, in C++ (Team of 2-5)

- Created C-style reflection system
- Created serialization system which allowed overriding prefab properties on individual objects
- Implemented Component-Based engine architecture
- Created safe handle for objects which would automatically be set to null when the object was deleted
- Created an object factory using serialized prefabs
- AI programming (Circling, Charging, Shooting, Wandering)
- Gameplay programming (Mouse/Keyboard input, procedural level generation)
- Created map to show known rooms in the level, scale to the size of the level, and update color based on room state
- Added action lists to interpolate properties and queue multiple actions

### EMPLOYMENT

**DigiPen Institute of Technology, Redmond WA**

**Project FUN Educator/TA**

**6/15 – 8/16**

- Answered questions from teens, and helped them fix difficult bugs.
- Introduced teens to source control and showed them how to use Mercurial with TortoiseHg
- Graded labs and programming assignments for 2D and 3D fixed function OpenGL graphics

**Nintendo (via Aerotek)**

**Quality Assurance**

**5/12 – 8/12**

- Found and verified logic and text bugs
- Documented bugs with steps for reproduction

**7/13 – 8/13**

**Writeguard Business Systems**

**Web Programmer**

**9/06 – 5/07**

- Added new features to existing PHP website, including real time product previews

### EMPLOYMENT

**DigiPen Institute of Technology**

**B.S. Computer Science & Real-time Interactive Simulation**

**2016**

**Minors in Game Design and Mathematics**