

# JASON STREDWICK

10714 Beardslee Pl  
Bothell, WA 98011

[www.jasonstredwick.net](http://www.jasonstredwick.net)  
[jason.stredwick@gmail.com](mailto:jason.stredwick@gmail.com)  
(206) 819-7515

## OBJECTIVE

I am a life-long learner that has a passion for programming. I seek employment that will challenge and diversify my skills and will continue to push the boundaries of my knowledge.

## SKILLS

<b>SKILL</b>	<b>Professional Use</b>	<b>Total Use</b>
C/C++ (Visual C++, gcc/g++, others)	3 yrs	14 yrs
Perl	1 yr	4 yrs
Java	9 months	9 months
SQL	2 yrs	2 yrs
Perforce	2 yrs	2 yrs
Linux/Unix/QNX	3 yrs	7 yrs
Matlab		3.5 yrs
SDKs, Toolkits, and Others I have used personally and academically.	OpenGL, QT, Win32, X, HTML, Javascript, php, cluster computing, sockets, multi-threading, lex/yacc, Windows	

## EDUCATION

<i>Michigan State University</i>	2002-2005
<b>M.S. Computer Science</b>	Dec 2005
GPA 3.8787	
Thesis: "Evolutionary Dynamics of 3D Digital Constructs"	
<i>Pacific Lutheran University</i>	1996-1998
<b>B.S. Computer Science</b>	May 1998
<b>Minor Mathematics</b>	
GPA 3.26	
<i>Columbia Basin College</i>	1995-1996
<i>Whitman College</i>	1994-1995

## RESEARCH EXPERIENCE

### Graduate Research Assistant

Fall 2002 - Spring 2005

*Department of Computer Science and Engineering  
Michigan State University*

I researched and developed the digital evolution system called WhirlingDervish, which evolves virtual 3D wireframe structures that can move around on a flat surface; see the **project section** for more information. This system became the platform for my thesis project. My thesis examined the use of common diversity and variation measurements as an approximation for convergence and stagnation. The goal was to find a set of measurements to compare results for studies using WhirlingDervish and like systems.

### Examination of High Mutation Rates using the Avida Software

Fall 2003

*CSE 891 – Selected Topics: Digital Evolution  
Michigan State University*

As part of a group project, I examined the effects of high mutation rates upon the probability of extinction for digital organisms using the Avida software.

## TEACHING EXPERIENCE

### Instructor: Game Programming and Animation

2006-2009

*Puget Sound Skills Center, Burien WA*

### Graduate Teaching Assistant

CSE 231 - Intro to programming I

Fall 2005

CSE 450 - Translation of Programming Language

Fall 2004, Spring 2005

*Department of Computer Science and Engineering  
Michigan State University*

## WORK EXPERIENCE

### Temp, DigiPen Institute of Technology

Jan 2010 – Current

- Developing web content for ProjectFUN workshops using Camtasia and Typo3.
- Teaching online ProjectFUN workshop material to new state-wide ProjectFUN clubs.

### Tech Academy Instructor

Aug 2006 – July 2009

*DigiPen Institute of Technology, Redmond WA*

- At the Puget Sound Skills Center, I helped high school students build a foundation in programming (C/C++), mathematics, and art principles to prepare them for an education/career in the video game industry.
- Created a curriculum alignment for the state of Washington. This alignment was used as the baseline for other Tech Academies.
- Generated problems and teaching materials.
- Generated ideas and implementations for parent communication, advertising, and further integration with the skills center.

## WORK EXPERIENCE (continued)

**Programmer** May 2002 – July 2002  
*LON-CAPA (Learning Online Network with CAPA)*  
*Michigan State University*

- Wrote the Perl module to generate and display statistical data for online coursework.

**Programmer** Sept 1999 – June 2001  
*FAAC Inc, Ann Arbor MI*

- Designed emergency vehicle fluid flow system to simulate the extinguishing of plane fires.
- Maintained SQL databases and instructor software for airport driving simulator products.
- Extended and maintained the scripting tool used to generate automated and waypoint traffic for driving scenarios used by all the commercial driving simulator products.
- Tested commercial systems and provided on-site installation for airport clients.
- Helped keep the various commercial product source trees in sync. This required maintaining a high level of communication between the various product lines and balancing the constant need to deliver.
- Helped establish a coding standard and storage practice for commercial products using Perforce.

**Programmer** Nov 1998 – Aug 1999  
*RDP (Ribosomal Database Project)*  
*Michigan State University*

- Developed XML-based tools using Java, Perl, and C++ to automate extraction, parsing, and loading of online GenBank data into a database.

**Programmer – Internship** June 1998 – Aug 1998  
*Battelle/PNNL, Richland WA*

- Learned and applied software engineering procedures to create a program that took data stored in a spreadsheet and convert it to an html catalog.

**Engineer Assistant – Internship** Mar 1994 – Aug 1994  
*Westinghouse / Hanford, Richland WA*

- Wrote a Fortran program to perform visualizations and statistical analyses on nuclear waste emission data.

## PROJECTS

**PaintGL** Current  
PaintGL is a work in progress that attempts to recreate a 2D drawing program using OpenGL.

**Tools for Phylogenetic Tree Analysis** Current  
At the request of a colleague from graduate school Dr. Gabriel Yedid, I am developing several tools for analyzing phylogenetic trees using the output from Avida software. I created an Avida independent way of loading and storing a phylogenetic tree, methods of traversal, pruning, and gamma value calculation. The gamma value is a single rational number representing the distribution of non-leaf nodes relative to the average age of the tree.

## PROJECTS (continued)

### Endian Testing

2009, 2006

I created a class that determines the endianness of a system at run-time using a static method that returns a static Boolean value to increase speed. Later, Andrew Ford submitted to me a compile-time variant that utilizes Boost. I have also recently added a few specializations for improved performance such as the use of SSSE3 instructions that allows for multiple byte reversals simultaneously.

### Extended Loki-Library Functors

2006

I modified the Functor code to make an explicit interface that all Functors share. Using this interface, I reorganized the code and added a few variants of my own.

### Basic Type Wrappers

2006

I added typedefs for the built-in types based on size. A wrapper was then created to hold these built-in types and offer a transparent interface to the data that will be optimized away for performance. The primary impetus for creating this wrapper and typedefs for the built-in types was due to my frustration while working on a uniform Functor that works transparently with global functions and object methods. It was a tremendous hassle and was surprisingly complicated for so little syntactic difference between the two types of functions.

### WhirlingDervish

2002 – 2006

I created the WhirlingDervish software as a potential open-ended evolutionary system. The software uses a simple argument based instruction set with the capability of connecting point-masses and springs into 3D forms wireframes. By then imparting a cyclic change to the spring force function, the forms eventually evolved a variety of simple movements in their flat, virtual environment. This project includes many different programming areas such as syntax processing, 3D rendering, genetic algorithm principles, and others.

### Temple and Fountain

Spring 2004

*CSE 891 – Selected Topics: Advanced Computer Graphics*  
*Michigan State University*

As part of a scene composition project, I created a temple with a flowing water fountain whose lighting changes as the sun and moon revolve around the scene. The program loads a file specifying the position, orientation, and texture of all the models into an object structure of my design. Then using the mouse and keyboard you can navigate the scene.

There was also a second program that utilizes the baseline code to generate the triangle meshes, normals, and texture coordinates for each model. I created the file format so that a file could be a standard mesh or a composite of multiple meshes. These files contained simple processing statements that aid in the storage and display of all the models in the scene.

### Monte Carlo Raytracer

Spring 2004

*CSE 891 – Selected Topics: Advanced Computer Graphics*  
*Michigan State University*

I extend an opengl rendering engine to include Monte Carlo ray tracing. This method of ray tracing is based on stochastically sampling light rays from the surface of a 3D light source to a point on an object. The incident angles of each ray are then combined to give the average amount of light hitting that point.

## PROJECTS (continued)

### **Spline Exploration**

Spring 2004

*CSE 891 – Selected Topics: Advanced Computer Graphics*

*Michigan State University*

The assignment was to explore splines and meshes in 3D graphics. I utilized the Catmull-Rom algorithm to create curved paths and define the backbone for generating deformable triangle meshes that moved along that path through constraining gaps.

### **Socket Shifting in Linux Kernel**

Spring 2003

*CSE 812 – Advanced Operating Systems*

*Michigan State University*

My group proposed and implemented a Linux kernel module that allows a socket connection to be moved to a different port and potentially a different address that is transparent to both client and server. We proposed this idea as a method for performing load balancing of servers.

### **Study of Time in DOS – Related to Y2K**

Spring 1998

*CS 486 – Senior Seminar (Senior Research Project)*

*Pacific Lutheran University*

My senior project was to research a topic related to Y2K. I sought to determine whether or not DOS would have the suggested problems when the clock rolled over at the millennium. After tracing through the various interrupt code, grouping assembly code into functional groups, and monitoring registers through test code, I determined that DOS would function at the millennium. However, it would eventually have a problem many years later.

### **Keyboard Handler – Transforming Keyboard Input in DOS**

Spring 1997

*CS 380 – Assembly Language and Computer Organization*

*Pacific Lutheran University*

Using MASM, I wrote a keyboard handler that takes keyboard input and transforms it to a different value.

### **Slot Machine Circuit Design for FPGA**

Summer 1997

*CS 490 – Reconfigurable Computing*

*Pacific Lutheran University*

Using Max Plus II, my group designed the circuit for a three numeric symbol slot machine. Our circuit design was then downloaded to a FPGA chip and run.

## AFFILIATIONS

### **Advisory Council – Game Programming and Animation Course**

Current

*Puget Sound Skills Center*

Members donate time to the class by performing mock interviews, presentations, student mentoring, and reviewing course objectives.

### **IAB – Department of Computer Science and Computer Engineering**

Current

*Pacific Lutheran University*

IAB members help the program adapt and improve through review and feedback.