John Turner

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Language Proficiencies

In research and professional environments : **C++, Java, C#, C, Python, Blender script, MEL, MATLAB, R, SQL, Javascript, Cross-platform Implementations (C++/MATLAB, Java/C++, Python/MATLAB, Python/R/SQL). I wrote my first doubly-linked list in Pascal in 1983.** I also greatly enjoy working in GLSL and CUDA but have not done so professionally yet.

Work and Paid Research/TA'ing Experience

Facebook/Meta AI Research : 3/20 to 3/22. Contingent Research Engineer on AIHabitat.org team.

Currently primary contributor to Habitat-Sim repository, in number of reviewed commits and secondary in code lines committed. Interfaced with research scientists, students and platform users to design and implement critical features to enable projects to meet conference and journal submission deadlines. Implemented key C++ functionality in Habitat-Sim simulator to facilitate research challenges, greatly expand dataset support, and facilitate extensive user customization capabilities. Built a subsystem based on class-templates to facilitate the implementation for, management of and easy interaction with data of indeterminate type both in-engine and via python bindings, primarily used as asset metadata management. Built Python and Blender scripts to deconstruct mesh environments into constituent pieces and synthesize metadata to support rebuilding these scenes in engine. Implemented tools to load and manipulate meshes, model Isometric camera view, synthesize meshes to visualize trajectories and other graphics-oriented functionality.

Georgia Tech : 8/17 to 1/20. Graduate Research Assistant (PhD research)

Advised by **Dr. Karen Liu** (8/17-1/19) Research focus on predicting optimal robotic control to assist an impaired biped in performing locomotion tasks, such as getting up, using RL and MPC paradigms.
Advised by **Dr. Jarek Rossignac** (8/17-1/18, 1/19-1/20) Researched using music to synthesize animation through signal analysis, deriving trig-based alternatives to Gaussians for ray tracing, and animating COTS patches to derive pleasing morphs.

Georgia Tech : 8/17 to 1/20. Graduate Teaching Assistant (PhD)

Head TA for **Intro to Graduate Algorithms** (CS 6505/6515) class for the **Online Master's Program**. Classes consisted of 350-500 students. Along with sharing exam grading duty, was solely responsible for coding projects (Bloom Filter, PageRank, Knapsack and Kruskal's algorithm), including designing assignment parameters and code templates and building multi-process autograder (Python), assisting all students via discussion and video lessons, and grading all code and report submissions.

Ignition One : 8/14 to 11/16. Data Scientist/Algorithmic Specialist

Built Linux/Python-based Tornado web servers to manage multiple instances of R environment running various analytic processes on clients' advertising performance. Wrote Reference Class R scripts and cron jobs to :

- Analyze and predict trends in inherently chaotic time series data using non-parametric algorithms such as Singular Spectrum Analysis.
- Use a Self-Organizing Map to find potential marketing targets based on similarities to known converters.
- Perform moments and time series analysis of client revenue and spend for optimization.
- Perform regression on advertising budgets to predict optimal spend across different ad channels.

Georgia Tech : 1/15 to 1/17. Graduate Teaching Assistant (Master's Degree)

TA'ed **Undergraduate and Graduate Computer Animation** class (CS 4496/7496 taught by Dr. Karen Liu) in Spring 2015, Spring 2016 and Fall 2016, helped students learn MEL scripting in Maya and to code (in C++) particle, rigid body (Baraff/Witkin) and fluid (Stam) simulations, and IK solver. Lectured CS7496 on Fluid Dynamics Simulation using Eulerian Grids. Proctored and graded projects and final exams.
TA'ed **Graduate Graphics** course (CS 6491 taught by Dr. Jarek Rossignac) in Fall 2015. Graded all submitted assignments and exams, assisted students in understanding and implementing optimized particle simulations, steady affine motion and morphs, 3D curve averaging. Derived mechanism for students to implement all questions from a difficult mid-term as part of regrade process. Derived final grades with approval of Professor.

Ignition One : 10/13 to 8/14. Senior Software Engineer

Part of a team of 14 developers working in an AGILE-based behavior-driven development environment. Co-designed and implemented web-based dot.net CQRS platform for large scale advertising client management system.

Georgia Tech : 5/13 to 8/17. Undergraduate/Graduate Research Assistant

Hired by Dr Karen Liu to code C++ Microsoft SDK-based Kinect library to be used with DART animation/physics simulation library, using motion-capture/IK solver, Voice and Gesture Recognition (included Neural Net to classify hand state) and custom Kinect-based UI components sliders, textboxes, levers, CBs. Implemented C++ SIMBICON state-machine-based controller in DART. Implemented data capture protocol via MATLAB in C++ to transparently collect and analyze performance of various biped controllers in comparison to biomech benchmark data. Used CMA-ES to improve controllers based on low dimensional data using worst performing biomech benchmarks. Implemented C++/DART version of Control-PBP algorithm (Hämäläinen et al. 2015).

Georgia Tech : 5/12 to 5/13 Undergraduate Research Assistant

Hired by Dr. Greg Turk (8/12-5/13 for pay) as an undergraduate RA, working over three semesters on simulations of height-field fluids (shallow water equations) eroding fractally(Square-Square subdivision – Musgrave '89) and procedurally generated terrain using height-field fluids governed by shallow water equations in a closed system. Developed novel approaches for eroding adjacent dry terrain(mass wasting) and transporting sediment during fluid transport calculation (Semi-Lagrangian method). Built full UI using OpenGL able to completely control simulation, analyze results and visualize processes.

Georgia Tech : 1/11 to 5/14. Undergraduate Teaching Assistant

TA'ed 6 different CS courses : **CS 1050 Discrete Mathematics and Proofs**, **CS 1331 Intro to OOP** (Java), **CS 2110 Computer Organization and Programming**(C), **CS2200 Intro to Systems and Networking** (C), **CS 3451 Intro to Graphics**(Java/Processing), and **CS 3600 Intro to AI**(Python); Suggested and developed assignment for CS 3600 for students to implement multiple hidden layer Neural Net with Back Prop that is still used.

DBA John Turner : 11/07 to present.

Most recently I designed and implemented SOM-based look-alike predictive modeling system to optimize email targeting of prospective customers. Performed technical support and provided custom application coding to meet a variety of needs endemic to small business, such as billing, accounting, inventory control and website design.

Talkbass.com : 3/00 to 1/18. Forum Administrator/Moderator

Chosen as moderator (2000) and subsequently hired as Forum Administrator (2007) of largest bass guitar discussion forum on the internet, currently having over 250,000 registered members – 127th largest discussion forum in the world. Developed usage rules with site owner and other admins, as well as determined sub forum layout, hired moderators from membership and addressed technical support issues via site's helpdesk.

Older Consulting and Work Experience

Abel Solutions, Inc. 5/00 to 10/06. Contract Programmer.

Developed power transformer tracking application for Marietta Power Company in C#/.Net 1.1, including designing and implementing databases (SQL Server 2000). Customized multiple SharePoint-based corporate intranets based on individual client needs. Designed and developed informational intranet used by marketing department of Coca-Cola Enterprises. DHTML/ASP internal intranet application for big three credit-reporting firm with over 200 forms. ASP/VB 6.0 COM object-based site for processing business loan applications and validation with various secretaries of state, across state lines. Designed graphics and interface for total overhaul of site, including implementing style sheets and graphics via Fireworks and Photoshop. Developed ASP/Web interface for an internal intranet discussion/reporting system for Pfizer(client) that included interacting with the client to develop the database and flow and functionality of the site, implementing it (including a fully functional discussion forum) and assisting with QA up to go-live date.

Charter Overlook Communications, Intl. 8/97 to 8/99. Applications and IVR Developer.

Developed IVR solutions on Windows NT 4.0/Dialogic D480-2T1 cluster platform using EASE development suite, interacting with SQL Server database and EASE beta test site. Maintained legacy DOS-based IVR platform. Developed reporting tools for VRU performance using Visual Basic and SQL Server, later upgraded to web-based billing tools.

Computer Associates International, Inc. 3/93 to 8/97, 8/99 to 5/00. Programmer.

Developed Windows GUI for 400+ screen client/server HR product (VB) by building code generator that derived and maintained source code for GUI from legacy AS400 application. Developed new C-based constructs used in GUI by other CA developers. Solely responsible for interaction between GUI team and QA, for 4 QA/Beta/Release cycles of the GUI product. Co-authored technical documentation and user manuals. Modified old code base to support Web-based interface, and implemented new screens to support Canadian-specific functionality. Expanded legacy Pascal code generator to support over 300 Canadian-specific interfaces.

Education

Georgia Institute of Technology

- **PhD Program (Fall 2017 – Fall 2019) On Leave of Absence as of 11/19.**
- **Masters of Computer Science (Fall 2014 - Fall 2016) - GPA: 4.0.**
- **All CS(24) and Math(5) classes required for Bachelor of Computer Science (2010-2014) - GPA : 4.0.**
- **Bachelor of Electrical Engineering (1986-1992)**

Academic Awards

2014 The Donald V. Jackson Fellowship
2014 Outstanding Graduate TA

Patent

Webb, Murray, John Turner, and Caroline McConnell. **System and Method for Forecasting of Asset Marketing**, Patent Application No. *14/887600,* October 20, 2015