

David Pritchard

drpritch@gmail.com

<http://davidpritchard.org/resume>

Summary of Qualifications

- **Software Developer & Data Scientist** with 17 years of experience
- **Problem solver** with outstanding numerical and analytical skills, exceptionally fast learner
- **Expert knowledge of C++**, sixteen years experience
- **Team leader** with experience supporting staff development, scoping workplans, managing projects and consultants
- **Clear communicator** with particularly strong visual skills
- Experienced across full stack including Unix toolchain, UIKit and Objective C/C++, Javascript/Typescript, Node, React, Universal Windows Platform, R, GIS databases, OpenGL, much much more
- Many areas of technical proficiency: 3D graphics, object-oriented design patterns, logit model estimation, systems programming, computer vision

Selected Work Experience

Mental Canvas 2016 – 2021 Remote
Senior Software Developer

- Jack-of-all-trades in very small team making an innovative 3D sketching tool largely in C++ and OpenGL ES/Metal, targeting iOS and Windows (UWP).
- Built graphics features: both 3D (camera controls, picking feature, shaders, BSP), 2D imaging (antialiased line/brush rendering, compositing, lasso tool)
- Built user interface and system features: touch with direct manipulation, responsive layout, system lifecycle management (suspend/resume), crash reporting data, user telemetry
- Architected cross-platform user interface to maximize code sharing while porting from Windows to iOS. Adopted reactive design with portable viewmodels, bindings to native views (UIKit/XAML).
- Championed CI/CD approach: first automatic nightly builds with Azure Pipelines, then mobile app deployment and finally automated provisioning+deployment for backend systems.
- Led development of a web-based 3D scene viewer in Typescript / WebGL / three.js. Major features include full support for mobile web, polished 3D controls taking full advantage of touch and trackpad, and Azure backend for storage.
- Scoped features, maintained and prioritized bug backlog, provided feedback on peers' work

Metrolinx 2008 – 2016 Toronto, ON
Manager, Modelling & Geomatics (2015 – 2016)
Senior Advisor, Strategic Policy & Systems Planning (2010 – 2014)

- Lead for travel demand forecasting at regional planning agency
- Effectively a data science position: running a computationally intensive statistical model designed for ridership forecasting, then interpreting and explaining the results.
- Improved quality control process; calibrated and automated transit assignment in EMME-based four-stage travel demand model.
- Introduced software best practices to modelling team: scrum/agile work planning, distributed version control, regression testing
- Managed a growing team: two staff for 2012–14, up to five staff for 2015–16. Informal mentoring role for a broader group of 10–15 staff. Duties included budgeting, hiring, performance reviews
- Taught internal course on data visualization and communication
- Led many studies: ridership forecasting, cost-benefit, transportation planning, rail electrification
- Steered launch of Enterprise GIS system and new base map

Side Effects Software 2003 – 2006 Remote
3D Software Developer, Houdini dynamics team

- Researched, designed and programmed physics-based cloth simulator in C++ on Linux/Windows
- Implemented Delaunay triangulation algorithm, a complex mesh-based approach involving quad-edge data structure
- Implemented advanced cloth/cloth collision algorithm, with challenging numerical properties due to ultra-thin geometry

Co-op Student / Developer 1996..2001
Autodesk (Alias, Discreet divisions), Side Effects Software, alt.software, Cadabra Design Libraries. 7 terms × 4 months

Education

University of Toronto 2006 – 2008 Toronto, ON
M.A.Sc. in Civil Engineering (A+)

University of British Columbia 2001 – 2003 Vancouver, BC
M.Sc. in Computer Science (92%)

University of Waterloo 1996 – 2001 Waterloo, ON
B.A.Sc. in Computer Engineering (90%)

- Published in *Computer Graphics Forum* and *Transportation* journals