

Dave Pagurek van Mossel

Research

[Controlling Procedural Modelling Interactively with Guiding Curves](#)

Co-authored with Abhishek Madan, Andrew McBurney, Paul Bardea and Tammy Liu

Proceedings of Graphics Interface 2019

- Defined a search function which, paired with Sequential Monte Carlo sampling, lets artists search the output of a generating grammar for 3D models in real time by drawing guiding curves
- Awarded the title of top research project at the 2019 University of Waterloo Software Engineering capstone symposium

Work

Software Engineering Intern at [Figma](#), San Francisco, California, Sept-Dec 2018

- Added support for stacks of fill styles as backgrounds for components and frames into the rendering system
- Implemented smart selections, enabling selections that look like lists or grids to be rearranged and refloved

Software Engineering Intern at [Cruise](#), San Francisco, California, Jan-Apr 2018

- Researched and developed a prototype library for general path planning, creating a quick initial path and using any additional computation time given to improve it
- Visualized interactive search trees generated from the path planner using WebGL, communicating with ROS for input

Software Engineering Intern at [Google](#), Mountain View, California, May-Aug 2017

- Investigated ways of using machine learning to solve problems on Internet of Things devices
- Implemented Tensorflow and OpenCV computer vision models and evaluated their performance

Software Engineering Intern at [Remind](#), San Francisco, California, Sept-Dec 2016

- Designed and implemented a REST API for district management, efficiently querying the graph of districts, schools, and users

Software Developer Intern at [Athos](#), Redwood City, California, Jan-Apr 2016

- Created a C++ library for defining signal processing pipelines by parsing a JSON-based language definition into a tree of filters, allowing variable scoping and mapping over lists

Software Developer Intern at [Shopify](#), Ottawa, Canada, May-Aug 2015

- Introduced new language constructs in the Shopify Query Language parser allowing granular querying of data in Go and Ruby

Projects

[The Engulfed Cathedral](#) (CS488 project), 2018

- Created a raytraced 3D renderer and a short film created with it for Waterloo's computer graphics course
- Implemented graphics techniques such as silhouette-constrained procedural generation, photon mapped lighting, ambient occlusion, volumetric materials, constructive solid geometry, and inverse kinematics
- Won the prize for top project in the class of Spring 2018

Open-source contributions

- Contributed bug fixes and features to [rosbag.js](#), [Radiant Player](#), a Facebook Messenger [Mac client](#) and [CLI](#), [Vim Auto-Pairs](#), and [Emerald language](#)

Education

- Pursuing an MSc in CS, University of British Columbia
Sept 2019 - Present
- Bachelor of Software Engineering, University of Waterloo
Sept 2014 - Apr 2019

Contact

- dave@davepagurek.com
- [davepagurek.com](#)
- [github.com/davepagurek](#)
- (613) 875-4951

Skills

- Professional experience working with **Javascript, C++14, GLSL, Ruby, Java, Go, Swift, SQL, Git, and Unix**
- Passion for creative approaches to visual and algorithmic design problems

Awards

- Dean's honour list, Winter 2017, Fall 2017, Spring 2018, and Winter 2019
- First place in Waterloo EngHack, both fall and winter 2015
- University of Waterloo President's Scholarship, \$2000 for a high school entrance average of over 90%, 2015
- Top 25% distinction on the Canadian Computing Competition, senior division, 2013 - 2014
- Jerry Dermer Memorial Prize in Engineering, 2014
- Ottawa-Carleton District School Board Silver Medal, given to high school averages of over 90%, 2010-2014

Leadership

- Founder and Organizer, [TerribleHack I-XIII](#), a hackathon for programming for its own sake rather than for a practical purpose, 2015-present
- Organizer, [Tech Retreat](#), a hackathon for high school students, 2015-16