Dave Pagurek van Mossel

Work

Full Stack Developer at **Butter Creatives**, Toronto, Ontario, Sept 2020-Present

- Developed infrastructure for modular creative code components to support building motion graphics content

Software Engineering Intern at **Figma**, San Francisco, California, Sept-Dec 2018

- Added rendering system support for multiple layers of fill styles as backgrounds for components and frames
- Implemented "smart selections," enabling items within selections that look like lists or grids to be rearranged within their detected structure

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

- Adapted machine learning models for Internet of Things devices

Software Engineering Intern at **Remind**, San Francisco, California, Sept-Dec 2016

Software Developer Intern at **Athos**, Redwood City, California, Jan-Apr 2016

Software Developer Intern at **Shopify**, Ottawa, Canada, May-Aug 2015

Open Source

WebGL Steward for **p5.js**, July 2022-Present

- Implemented features and fixed bugs related to shape and line drawing, shaders, gif handling, and math
- Reviewed code and answered questions
- Wrote glsl-autodiff, a library to deform 3D models in real time in shaders
- Wrote p5.Framebuffer, a library to efficiently draw to layers and add blur and shadows
- Wrote p5.buildGeometry, a library to dynamically construct 3D models

Miscellaneous, 2015-Present

- Contributed bug fixes and features to rosbag.js, Radiant Player, a Facebook Messenger Mac client and CLI, and Vim Auto-Pairs

Research

StrokeStrip: Joint Parameterization and Fitting of Stroke Clusters
Co-authored with Chenxi Liu, Nicholas Vining, Mikhail Bessmeltsev and Alla Sheffer
SIGGRAPH 2021

- Developed an algorithm to fit clean lines to clusters of sketched vector strokes by modeling a discrete-continuous optimization problem that can be iteratively solved

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 Sequential Monte Carlo sampling-based search function which lets artists search the output of a 3D model generating grammar in real time by drawing guiding curves

Education

- MSc in CS, University of British Columbia
  Sept 2019 - Apr 2021
- Bachelor of Software Engineering, University of Waterloo
  Sept 2014 - Apr 2019

Contact

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- github.com/davepagurek

Skills

- Professional experience working with **Javascript, Typescript, C++, GLSL, Ruby, Java, Go, Swift, SQL, Git,** and **Unix**
- Professional experience employing a wide variety of real-time computer graphics techniques

Awards

- NSERC CGS-M Scholarship, Fall 2020
- 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, a hackathon for programming for its own sake rather than for a practical purpose, 2015-2020
- Organizer, Tech Retreat, a hackathon for high school students, 2015-2016