Sam Havens

CTO of CarLabs

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About

As the CTO of a CarLabs, I am in charge of making sure our engineering team is functioning efficiently and realizing business goals. I understand current practices, and how technology is likely to change in the coming months. My math background helps me to stay up-to-date with developments in deep learning and other AI fields relevant to NLP. Currently, I am super into functional programming and learning about type systems. I think Docker is amazing and am interested to see how things like now.sh, Serverless, and Apex will change DevOps. I make front ends with ES6, React, and Redux, and back ends with Node, or really any scripting language. But I love designing with Sketch, making visualizations in d3.js, or knocking something quick and dirty out in PHP. In my spare time I read about Deep Learning, functional programming, and other technology-related topics... but I have irrationally strong feeling for JavaScript. I think conversational UIs are the future and am super excited to work on them. I care a lot about education, and still teach some math whenever I can. As a board member, I also help to guide Topanga Mountain School.

Profiles

Twitter
sam_havens

Medium
samhavens

GitHub
samhavens

LinkedIn
samhavens

Work

CarLabs

2016-03-15 —

CTO http://carlabs.com

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Highlights

- Grew engineering team from 2 to 9 full-time members.
- Developed custom solutions with customers to meet their business needs while leveraging our strength in web development and machine learning.
- Frequently presented to the board and investors.

CarLabs

2014-04-01 — 2016-03-15

Full Stack Developer http://carlabs.com

Before becoming CTO, I was a full-stack developer, working on everything from the database (MySQL), to backend code (a Node/Hapi app supported by services written in PHP/Yii2 and Python/Flask), to the front-end, where I modernized our build and deploy process by introducing Gulp.js and then Webpack. As one of two full-time developers, I had to make decisions about design, architecture, and libraries and live with those choices. I pitched projects internally, design, prototype, and built them using tools that included: Vanilla JavaScript, ES6, React, Redux, d3.js, jQuery, lodash, Bootstrap, Material-UI, Material Design Lite. I ended up doing a lot of gluing-together of various APIs, and the last API I helped design is really badass.

Highlights

- Built a lead-scrubbing tool using PHP and MySQL that scored leads using a statistical model.
- Made a research tool using Yii, MySQL, jQuery and d3.js that updates charts in realtime in response to user preferences.
- Designed and built a mobile web app using Node, React, ES6, Webpack, and MaterialUI.
- Modernized front-end build process to use Webpack and ES6.
- Pitched product design which has become the focus of the company.

Topanga Mountain School

2014-05-01 —

Board Member and Teacher http://www.topangamountainschool.org

I was a full-time math and science teacher from 2007-2014. I trained new hires, designed curricula, and constantly improved my methods by incorporating new strategies and technologies. Anecdotally, alumni performance and engagement in math and science at the high school and college level improved during my tenure, but this is hard to quantify. As a board member, I work to increase our (already strong) employee

retention, automate processes for teachers and administrators, and find new sources of funding for innovative programs.

Highlights

- Introduced Khan Academy to the math department in 2009, which improved instruction by making feedback instantaneous.
- Ran the programming club, which regularly had attendance of over 10% of the student body, with a near even gender split.
- Brought programming into the math program by adding a unit on Ruby to the Advanced Algebra class.
- Modernized the focus of the statistics unit by utilizing Google Sheets and Tuva Labs.
- Researched and implemented new employee benefits program.

Education

California State University-Northridge

2011-01-01 — 2013-05-21

Mathematics
Master of Science

Courses

- Topology
- Advanced Abstract Algebra
- Mathematical Modeling
- Calculus on Manifolds
- Complex Analysis

University of California, Santa Barbara

2002-01-01 — 2006-06-15

Physics
Bachelor's Degree

Courses

- Advanced Linear Algebra
- Tensor Analysis
- Quantum Mechanics
- Advanced Mechanics
- Communicating Science to the Public

Awards

Bianchi Outstanding Graduate Student

by **California State University Northridge** Awarded 2012-05-21

Awarded to one graduate student per year in the College of Science for outstanding academic and research performance.

IRIS Fellow

by **Interdisciplinary Research Institute for the Sciences at CSUN** Awarded 2012-09-01

For research in mathematical physics.

LEAPS Fellow

by **California Nanosystems Institute** Awarded 2006-10-01

Helped communicate science to the public by running the science club at local middle schools.

Publications

Relative velocities, geometry, and expansion of space

2012-10-11

Published by **NOVA** View publication

What does it mean to say that space expands? One approach to this question is the study of relative velocities. In this context, a non local test particle is 'superluminal' if its relative velocity exceeds the local speed of light of the observer. The existence of superluminal relative velocities of receding test particles, in a particular cosmological model, suggests itself as a possible criterion for expansion of space in that model. In this point of view, superluminal velocities of distant receding galaxy clusters result from the expansion of space between the observer and the clusters. However, there is a fundamental ambiguity that must be resolved before this approach can be meaningful. The notion of relative velocity of a nonlocal object depends on the choice of coordinates, and this ambiguity suggests the need for coordinate independent definitions. In this work, we review four (inequivalent) geometrically defined and universal notions of relative velocity: Fermi, kinematic, astrometric, and spectroscopic relative velocities. We apply this formalism to test particles undergoing radial motion relative to comoving observers in expanding Robertson-Walker cosmologies, and include previously unpublished results on Fermi coordinates for a class of inflationary cosmologies. We compare relative velocities to each other, and show how pairs of them determine geometric properties of the spacetime, including the scale factor with sufficient data. Necessary and sufficient conditions are given for the existence of superluminal recessional Fermi speeds in general Robertson-Walker cosmologies. We conclude with a discussion of expansion of space.

Skills

Web Development

- JavaScript
- ES6
- Node

- Express
- React
- React Native
- Hapi
- d3.js
- MySQL
- PostgreSQL
- CSS3
- SASS
- Webpack
- Gulp

Conversational UI

- API.ai
- Botkit
- Slack API
- Messenger API
- Sentiment Analysis
- Entity Recognition
- Intent Classification
- Conversation Design

DevOps

- AWS
- Apache
- NGINX
- Docker
- Vagrant
- Serverless Architecture

Other Languages

- Python
- Elixir
- Mathematica
- Racket

Education

- Presenting
- Curriculum Design
- Training
- Tutoring
- Mentoring

Languages

Spanish
I get by

English
Native speaker

French
Minimal