DAVID MAO

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WORK EXPERIENCE

Amazon.com, Inc.   Seattle, Washington
Amazon Transportation Core | Software Development Engineer 2   *August 2014 – Present*
- Developed Amazon's truck route planning engine, tackling a **network optimization problem** to move freight while minimizing cost; similarities to **Traveling Salesman** and Scheduling problems. Engine handles the majority of automated truck planning to bring freight into and out of Fulfillment Centers in NA & EU (several million trucks planned in NA per year)
- Prototyped and launched a **multithreaded solution construction algorithm** which works in conjunction with the original optimizer, saving at least $3 million per year and obtaining comparable objective function results 40-60% faster
- Defined and implemented heuristics to calculate transit times for 1.6 billion US postal code combinations, enabling network expansion simulations and reducing manual configurations. Minimized latency of billions of calculations per session by utilizing the **GNU Trove** library and custom memory & latency efficient data structures. AWS **S3** for backend data storage
- Led organization-wide data modeling changes across multiple teams, decoupling systems from incorrect, tightly engrained legacy assumptions after collaborating with network planning and Fulfillment Center operations to accurately capture real world timing constraints on trucks and freight loading durations
- Designed and built a web UI for scheduling and editing truck movements, following the **MVC** paradigm and featuring dynamically populating fields, input validation, and user authorization; saved truck scheduling teams 12.5 hours a day
- Launched team's manual truck scheduling service stack in India after investigating country specific constraints and implementing extensible modeling changes to support the use cases
- Deployed system for Amazon Delivery Logistics to consume real time package creation notifications utilizing AWS **SQS**, providing visibility up to 24 hours earlier to planning systems
- Demonstrated leadership in facilitating team's **Agile Scrum** practices and organizing a weekly learning series to discuss project design problems, best practices, and new development technologies

Adobe Systems   San Francisco, California
Creative Cloud | Intern   *June 2013 – September 2013*
- Created a Feature Flipper using **backbone.js**, allowing developers to customize feature sets for A/B testing
- Overhauled the AWS **Elastic Load Balancing** configuration logic, migrating from awssum.io to AWS SDK for **node.js**
- Collaborated with Adobe Globalization Core Services to refine locale-formatting rules for the cloud file view

UCLA Common Collaboration & Learning Environment   Los Angeles, California
Web Development Team | Intern   *July 2012 – September 2012*
- Implemented functionalities to revamp UCLA's undergraduate course management system, utilized by 25,000+ students
- Managed **MySQL** databases, using **SQL** to query tables containing sensitive course and student information
- Programmed a **PHP** script with SQL queries to automatically find and enroll users fulfilling specified criteria

PROJECTS

Personal Website   *January 2015 – Present*
http://davidmao.me/
- Built a personal site and photography portfolio page utilizing responsive design, featuring parallax and Instagram integration
- Created a responsive, flat-design weather info site featuring dynamic backgrounds based on current weather
- Utilized **HTML5** Geolocation and Google Geocoder API for automatic location detection

Google Hangouts Speech Translator   *March 2014*
- Developed a Google Hangouts Extension in **JavaScript** for more seamless multilingual communication
- Achieved real-time speech translation, presenting spoken words as translated text captions to other users
- Leveraged **Google Translate API** and Speech to Text API for language auto-detection and translation

TECHNICAL SKILLS

- **Languages:** Java, JavaScript, HTML, CSS; **Familiar With:** C/C++, SQL, Ruby, PHP
- **Technologies & Frameworks:** Git, jQuery, JSON, REST, Spring, JUnit; **Familiar With:** Bootstrap, Node.js, Google Guava
- **AWS:** S3, DynamoDB, RDS, SQS, SNS, EC2; **Familiar With:** Elastic Load Balancing, Cognito, Cloudwatch, Lambda, SES
- **Other:** Agile Scrum, Distributed Systems, Software Development Life Cycle, Load Testing, IntelliJ, Linux, Mac OS

EDUCATION

University of California, Los Angeles   *June 2014*
Bachelor of Science, Computer Science
- Relevant Courses: Algorithm Analysis, Machine Learning and Artificial Intelligence Fundamentals, Object-Oriented Design, Web Applications, Database Systems, Computer Security, Software Engineering, Computer Graphics, Operating Systems