Shang Liu

1246 W 30th St, Los Angeles, CA 90007 | liushang1997@gmail.com | 323-336-2770 | linkedin.com/in/sliu97

EDUCATION

University of Southern California   **Los Angeles, CA**
Master of Science in Computer Science; GPA: 4.00   *Jan. 2020 – May 2022 (expected)*
- Courses: Analysis of Algorithms, Web Techs, Machine Learning, Operating System, Computer Network, Database

Beijing University of Posts and Telecommunications   **Beijing, China**
Bachelor of Science in Engineering; Major: E-Commerce Engineering with Law; GPA: 3.89   *Sept. 2015 – June 2019*
- Courses: Data Structure, C, Java, Database Systems, Network Programming, Software Engineering, Information System

SKILLS

- Programming Languages: Java, Python, C++, C, JavaScript, Kotlin, PHP, SQL, C#, Shell, HTML, CSS
- Web Technologies: Angular, Spring, Django, Node.js, WordPress, MySQL, MongoDB, Firebase, Ajax, RESTful API
- Data Science Tools: Hadoop, Spark, TensorFlow, PyTorch, MATLAB, Keras, scikit-learn, Pandas, Matplotlib, Neo4j

PUBLICATION

Y. Min, **S. Liu**, C. Lou and X. Cui, "Learning Protein Structural Fingerprints under the Label-Free Supervision of Domain Knowledge" *IEEE International Conference on Bioinformatics and Biomedicine*, Madrid, Spain, 2018, pp. 69-74. (Also won the Best Poster Award in *The 17th Asia Pacific Bioinformatics Conference – APBC 2019*)

EXPERIENCES

3G Biotech   **Beijing, China**
Software Engineer Intern   *Apr. 2019 – June 2019*
- Collaborated with 8 colleagues in the iteration of the Class-Based Gene Disease Association Knowledge Graph project.
- In charge of supplementing the knowledge graph: coded SPARQL script to retrieve and classify 3977 melanoma-related (a kind of skin cancer) RDF triples from DisGeNet database; used Neo4j to store collected data for project usage.
- Upgraded the UI of the graph visualization page by using Bootstrap to replace raw CSS for better appearance.
- Incorporated Elasticsearch into the search function which applied Cypher query to locate and highlight matched nodes.

IIIS, Tsinghua University   **Beijing, China**
Undergrad Research Assistant   *Apr. 2018 – Sept. 2018*
- Joined Xuefeng Cui's group, did research on homologous protein prediction using deep learning and parallel computation.
- Co-proposed a novel method ContactLib-DNN to quickly scan structure databases for homologous proteins, which achieved a AUC of 0.959 and improved by 56.2% on the accuracy of the best match comparing to existing methods.
- Responsible for training a deep auto-encoder in TensorFlow to represent raw protein structures with fingerprint vectors.
- Rewrote the pairwise alignment function in C++ using bit manipulation, speeding 33 times up compared with Python.
- Co-developed a web searching application by Django, which are able to align over 140,000 structures within 1.7 seconds.

PROJECTS

Android App for eBay Catalog Search (Web Techs Coursework)   **USC, Los Angeles, CA**
- Developed an Android App to search eBay items catalog and detailed information with 5 screens in Java and Node.js.
- Called `findItemsAdvanced` eBay API to check field and fetch result; called `GetSingleItem` to fetch item details.
- Supported swipe refresh to re-fetch item listings result and update the catalog in RecyclerView on the current tab.
- Employed Volley asynchronous HTTP requests to load data which also avoided blocking of the main UI thread.

UNIX Socket Programming (Computer Network Course Final Project)   **USC, Los Angeles, CA**
- Implemented a computational offloading including one client with compute and write functions and two back-end server.
- Built server A for storage, B for computation, an AWS server and a monitor; implemented TCP for the connection of AWS with client and monitor, and UDP for the connection of AWS with server A and server B in C language.

Cloud-Based Robot Products Online Shopping Web App   **BUPT, Beijing, China**
- Led a three-student group to accomplish a web app under the principle of Agile programming in three weeks; designed a tech stack in which using react-bootstrap in front end and integrating Node.js with Cloud Firestore in the back end.
- Implemented the cart, checkout and order module in full stack; employed transaction to read and write the database in case any problem caused by concurrency; called PayPal REST API in Node.js to fulfill the checkout process.
- Leveraged CSS Fade transition on a Toast class in react-bootstrap to enable dynamic deletion of shopping cart items.