Ou Changkun

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Resume

Stop talking. Just coding.

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Education

University of Munich (LMU) — Munich, Germany
Ph.D. Candidate in Media Computer Science. — *Feb. 2019 – Present*

My research focuses on computational geometry, imitation learning, and human-computer interaction. In particular, my research brings neural networks in learning the latent representation of three-dimensional polygonal mesh, models visual preference elicitation process to understand user behavior in 3D modeling, and develops efficient algorithms or industrial tools for real-time 3D rendering.

- **Publications**: Link

University of Munich — Munich, Germany
Master of Science in Human-Computer Interaction (HCI); GPA: 1.63 of 1.00, "gut". — *Oct. 2016 – Jan. 2019*

I decided to do my master degree in HCI because I believe building great products requires not only technical details but also a higher-level understanding of humanity. The degree extends my understanding of how to modeling user behavior and how to design proper user studies for investigating product issues. Beyond doing compulsory HCI courses, I also participated most of my course in machine learning and high-performance parallel and distributed computing related fields, and therefore I was part-time hired as a student tutor in machine learning and deep learning lectures because of my excellent grades.

- **Transcript**: Link
- **Thesis**: *Understanding and Predicting Web Browsing Behavior*. The thesis proposed a sequence to sequence machine learning model that studied the modeling ability of web browsing behavior. The proposed model involves not only server-side recorded requests, but also integrates client-side browser multi-tab branching, backtrack viewing, and stay the duration of users. Experiments and analysis result shows the model suggests client-side modeling of browsing data is better for classification and prediction of user's web browsing behaviors.

Southwest University for Nationalities (SWUN) — Chengdu, China
Bachelor of Engineering in Computer Science; Grade: 3.74 of 4.0, "Top 1 Student". — *Sep. 2012 – Jul. 2016*

During my bachelor studies, I spent my time exploring many different computer science areas. For instance, I wrote a tiny compiler when I was studying compilation theory. Mathematics is one of my side interests, and therefore, I received an excellent grade in all mathematics courses.

- **Transcript**: Link
- **Thesis**: *Designing Alternative Contact-free Control Modalities for Smart Watches*. The thesis explores all existing interaction techniques on smartwatch products and then introduced a contact-free interaction design for Apple Watch as a case study. The experiment of the thesis shows that the proposed contact-free interaction gains higher acceptance and comfortability than existing interactions.

Work Experiences

Research Assistant — Munich, Germany
University of Munich — *Aprl. 2018 – Present*

- **Teaching Assistant**: Seminar Advances in Computer Graphics
- **Tutor**: Deep Learning and Artificial Intelligence, notes on GitHub
- **Tutor**: Machine Learning, notes on GitHub.

Vice President of Software Engineering (Remote) — Chengdu, China
LabEx — *Apr. 2018 – Jan. 2019*

- **Team leader and leading backend development of the oversea product**: I lead and responsible for the product development in backend and frontend. I evolve the existing architecture and split a monolithic backend web application into multiple microservices. The product scales machine cluster from 20 to 200 for active daily users, and its user group increases from 5k to 30k during my incumbency.
- **Multi-cloud automation**: I developed a fully automated multi-cloud resource management microservice in Go. The service defines a general abstraction cross all cloud provider, it automatically manages all user requested resources allocation and releases outdated resources. For instance, a user of the service can allocate new cloud instances for temporal using without noticing the instance was allocated in either AWS, AlibabaCloud, or others. The service supports more than 15 cloud products and integrated 3 cloud providers, being able to support almost unlimited concurrent users and has been used by 10k+ users.
- **Cluster management service**: I developed a microservice in Go that similar to Kubernetes and Docker Swarm. The service manages multiple server clusters, and auto-scaling its cluster size upon request cross multiple cloud providers. Each cluster contains multiple physical machines, and each machine runs many docker containers. The key feature of the service eliminates the difference between the physical machine and the docker container. The runtime of the service includes a system monitor with request prediction algorithm that I invented for efficient auto-scaling with consideration of overcommit ratio and a task scheduler for managing all distributed asynchronous task execution with two-level caching optimization.
- **Remote desktop proxy**: I developed a middleware that provides generic remote desktop proxy in Go and Cgo. The proxy translates VNC/RDP/SSH protocol data, and establish WebSocket connection to a web browser for providing remote desktop GUI.
- **Used tech. stack**: Vue, jQuery, Webpack, Electron; Backend: Go, Cgo, Gin, Beego, gRPC, MySQL, MongoDB, Redis, Hypervisor, Nginx, Docker, Kubernetes, AWS, AlibabaCloud, etc.

Fullstack Engineer (Freelance) Munich, Germany
MagicLingua *Nov. 2017 – Mar. 2018*

- **Language Teaching Voice Bot**: I am part of the team in developing a voice bot that provides English learning teaching service. The bot can communicate with its user and improve their English skill by the real-time response. My responsibility is to implement the backend support designed conversations using Amazon Alexa.
- **Speech Recognition Solution & Web Development**: I responsible for the development of speech recognition solution over web technologies, such as using WebSocket for audio streaming, using Google Cloud STT and TTS services for speech recognition and synthesis, etc. The challenging part of using existing speech recognition service for a language learning application is a new language learner sometimes does not produces positive audio samples, and even multilingual. Therefore, I developed many text-based falt tolerances technique for improving the understanding of user speech based on machine learning algorithms.
- **Used Tech. Stack**: Frontend: Angular, Backend: NodeJS, ExpressJS, WebSocket, Python, Flask, MongoDB, Elasticsearch, AWS Serverless, Tensorflow, Numpy, Matplotlib

Skills

- I have good skills in web development and machine learning. and I can use the following languages: **go**; **python**; **javascript**; **c/c++ (for optimization)**; markdown; LaTeX; native Chinese; fluent professional English; elementary German
- **Certificates:** Coursera, Andrew Ng: Deep Learning Specializations, certificates: 1, 2, 3, 4, 5

Open Source Contribution

- **Tensorflow (130k+ stars)**: Contributor
- **Go (60.1k+ stars)**: Contributor
- **Modern C++ Tutorial (3.9k+ stars)**: I am the author of the book. The book provides the state-of-the-art content towards modern C++, which includes C++11/14/17/20.
- **Go under the hood (800+ stars)**: I am the author of the book. The book presents a source code study regarding Go, which includes its runtime, compiler and most important packages.
- **Official Tensorflow document translation (3.5k+ stars)**: I am the main contributor and project maintainer.
- **Juejin Translation Public Community (22.6k+ stars)**: Major contributor, translated 50+ articles. Main reviewer of AI related articles.
- **Check my GitHub homepage for more projects**: github.com/changkun