Ou, Changkun

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Resume

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Education

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

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

- **Thesis**: *Understanding and Predicting Web Browsing Behavior.*

Southwest University for Nationalities (SWUN) — Chengdu, China
Bachelor of Engineering in Computer Science; Grade: 3.74/4.00, "Top 1 Student". — *Sep. 2012 – Jul. 2016*

- **Thesis**: *Designing Alternative Contact-free Control Modalities for Smart Watches.*

Work Experiences

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

- **Teaching Assistant**: Geometry Processing
- **DevOps**: Compatability development and migration of a 15 years old CMS system (2005).
- **Teaching Assistant**: Computer Graphics
- **Teaching Assistant**: Online Multimedia
- **Teaching Assistant**: Seminar Advances in Computer Graphics
- **Tutor**: Deep Learning and Artificial Intelligence, notes on GitHub
- **Tutor**: Machine Learning, notes on GitHub.

Backend Software Engineering (Remote) — Chengdu, China
LabEx Technology Ltd — *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.
- **Remote desktop Control Proxy**: I responsible and developed a middleware that provides generic remote desktop proxy in Go. The proxy translates VNC/RDP/SSH protocol data, and establish WebSocket connection to a web browser for providing remote desktop GUI.
- **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abstraction cross all cloud provider, it automatically manages all user requested resources allocation and releases outdated resources.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.
- **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

Rocketlingo UG *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 specialized in computer graphics, machine learning, and modern web development using **go**; **javascript**; **c/c++**; **python**; 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 (143+ stars)**: Contributor
- **Go (71.3k+ stars)**: Contributor
- **etcd (28.2k+ stars)**: Contributor
- **Modern C++ Tutorial (5.1k+ 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 (1.8k stars)**: I am the author of the book. The book discusses Go source code, includes its runtime scheduler, garbage collection, compiler and etc.
- **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.
- **The Swift Programming Language Chinese Translation (18.7k+ stars)**: Major contributor (in Swift 1.x). The translation was officially acknowledged by Apple Inc.
- **occamy**: The project implements a modern remote desktop proxy written in Go. It provides web browser GUI for connecting vnc/rdp/ssh servers.
- **Check my GitHub homepage for more projects**: github.com/changkun

Selected Publications

- Kai Holländer, Luca Schellenberg, Changkun Ou, Andreas Butz *All Fun and Games: Obtaining Critical Pedestrian Behavior Data from an Online Simulation* In ACM CHI Conference on Human Factors in Computing Systems, Late-Breaking Work, April 25, 2020, Honolulu, HI, USA. English
- Changkun Ou, Yifei Zhan, Yaxi Chen. *Identifying Malicious Players in GWAP-based Disaster Monitoring Crowdsourcing System.* In IEEE ICAIBD' 19: Proceedings of the 2nd International Conference on Artificial Intelligence and Big Data. Chengdu, Sichuan, China, May 25-28, 2019. English, Slides.
- Changkun Ou, Jingyi Li, Yong Ma. *Cultivation and Incentivization of HCI Research and Community in China: Taxonomy and Social Endorsements.* In CHI'19 Workshop on "HCI in China: Research Agenda, Education Curriculum, Industry Partnership, and Communities Building", Glasgow, UK, May 2019, 2019. English, Poster.
- Changkun Ou, Malin Eiband(advisor), Daniel Buschek(co-advisor), Heinrich Hußmann(responsible professor). *Understanding and Predicting Web Browsing Behavior.* 2019, **Master Thesis**.
- Changkun Ou. *An Introduction to Recent Mobile Affective Inference Techniques: Methods, Applications and Challenges.* In Advanced Seminar Media Computer Science, IFI LMU, 2018. English, Slides.

- Matthias Geiger, Changkun Ou, Cedric Quintes. *WatchOut: A Road Safety Extension for Pedestrians on a Public Windshield Display*. In Lercture Advanced Topics in HCI, IFI LMU, 2017. Arxiv preprint. Poster.
- Changkun Ou, Yaxi Chen(advisor), Andreas Butz(co-reviwer). *Designing Alternative Contact-free Control Modalities for Smart Watches*. 2016, **Bachelor Thesis**. Simplified Chinese, English Video
- Yaxi Chen, Changkun Ou. *Combining Touch Biometrics and Motion Sensors for Hand Posture Recognition and User Authentication System*. In Journal of Southwest University for Nationalities(Nature Science Edition). 2016, 42(4):429-435. Simplified Chinese
- Yaxi Chen, Changkun Ou, Zhaoyang Guo. *Space interactions based on monocular vision and simple gestures*. In Journal of Southwest University for Nationalities(Natural Science Edition). 2014, 40(16):871-876. Simplified Chinese
- Changkun Ou, Mu Huang, Mengxin Shi, Jiang Cheng. *A Study in Keep-Right-Except-To-Pass Rule*. In The Mathematical Contest in Modeling, 2014, **Meritorious Winner** English

Selected Talks

- Changkun Ou. *Go 2 Generics? A (P)review*. Go Night Reading Meetup, 2020. English.
- Changkun Ou. *Technological Outlook*. Online Multimedia, 2019. English.
- Changkun Ou. *Understanding Communicating Sequential Processes*. Go Night Reading Meetup, 2019. English.
- Changkun Ou. *Simplicity is complicated: On the balance of performance and knobs*. Internal Doctoral Colloquium Autumn, 2019. English.
- Changkun Ou. *Real-world Go Concurrency Bugs*. Go Night Reading Meetup, 2019. Chinese.
- Changkun Ou. *Internals of Channel and Select in Go*. Go Night Reading Meetup, 2019. Chinese.
- Changkun Ou. *Identifying Malicious Players in GWAP-based Disaster Monitoring Crowdsourcing System*. ICAIBD 2019. English.
- Changkun Ou. *Understanding Generalization in Deep Learning*. Advanced Seminar Deep Learning, IFI LMU, 2018. English, Video.

Honors & Awards

- **Papers with Special Recognitions** — Munich, Germany
  Outstanding Reviews — *Nov. 2019*
- **Siemens AILab Hackathon** — Munich, Germany
  2nd Winner — *Nov. 2017*
- **China National Scholarship** — Chengdu, China
  at UESTC — *Sep. 2016*
- **Excellent Bachelor Graduation Thesis Award** — Chengdu, China
  at SWUN — *Jun. 2016*
- **Best University Graduates Student Award** — Chengdu, China
  at Sichuan Province — *Jan. 2016*
- **China National Scholarship** — Chengdu, China
  at SWUN — *Sep. 2014*
- **American Mathematical Contest in Modeling(MCM) 2014** — Chengdu, China
  Meritorious Winner — *Apr. 2014*