Ou, Changkun (欧长坤)

Curriculum Vitae

Science and art, life in between

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EDUCATION

LMU Munich	Munich, Germany
Ph.D. Media Informatics.	*Feb. 2019 – (exp.) Feb. 2023*
LMU Munich	Munich, Germany
M.Sc. Human-Computer Interaction; overall grade: 1.63 (max. 1.0) between "Very Good" and "Good"	*Oct. 2016 – Jan. 2019*
University of Electronic Science and Technology of China	Chengdu, China
M.Eng. Software Engineering	*Aug. 2016 – Sep. 2016*
Southwest University for Nationalities	Chengdu, China
B.Eng. Computer Science; overall grade: 3.74 (max. 4.0), "Top 1 Student"	*Sep. 2012 – Jul. 2016*
University Entrance Exam	Huaihua, China
Overall grade: 512 (max. 750)	*Sep. 2000 – Jul. 2012*

PROFESSIONAL EXPERIENCE

Research Associate — Munich, Germany

LMU Munich — *Aprl. 2018 – Present*

- **As researcher**: research on human-in-the-loop machine learning graphics systems
- **As teacher**: teach 12 classes and supervising more than 20 student thesis and seminars
- **As developer**: develop, migrate, and maintain a 17 year-old university CMS system, and a 13 year-old collaborative system

Backend Software Engineer (Remote) — Munich, Germany

LabEx Technology Ltd — *Apr. 2018 – Jan. 2019*

- **As team leader**: leading developments of an oversea product; established microservice based backend architecture; the product autoscales cloud instances (on AWS/AlibabaCloud) ranging from 20 to 200; the product user group grows from 5k to 30k during my 10 months incumbency.
- **As a developer**: 1) developed a scalable remote desktop proxy (support WebSocket to VNC/RDP/SSH protocols) using Go; 2) developed an automated multi-cloud resource management microservice that abstracts cross cloud providers (supports AWS/AlibabaCloud over 15 cloud products, e.g., IAM/EC2/VPC/etc), scales and used by 10k+ users; 3) developed a kubernetes-like container and instance hybrid management service.
- **Involved techniques**: Frontend: 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*

- **As developer**: developed a voice bot to support novice language learner to improve their language skills by real-time voice recognition and synthesis (supports web and Amazon Alexa), optimize for audio streaming and multilingual falt tolerances using machine learning
- **Involved techniques**: TypeScript; WebSocket; Angular; Google Cloud STT and TTS; Sklearn; Voice Recognition; etc

Software Engineer (Intern) — Chengdu, China

Shiyanlou — *Jun. 2016 – Sep. 2016*

- **As developer**: developed a cross-platform desktop software using Electron; developed a recommendation system for E-learning recommendation; deployed and operates a logging system for internal data analysis
- **As writer**: wrote more than 20+ professional educational materials regarding C++
- **Involved techniques**: C++; Python; MongoDB; Collaborate Filtering; Elasticsearch; Logstash; Kibana; Redis; Electron, etc.

TEACHING EXPERIENCE

Lecture Computer Graphics	Summer 2020/2021/2022

As teaching assistant and instructor at LMU Munich. Authored materials: https://github.com/mimuc/cg1

Practical Geometry Processing	Winter 2020/2021

As lecturer and instructor at LMU Munich. Authored materials: https://github.com/mimuc/gp

Lecture Information Visualization	Winter 2021

As teaching assistant at LMU Munich. Authored materials: https://github.com/mimuc/infovis

Lecture Online Multimedia	Winter 2019

As teaching assistant and guest speaker at LMU Munich. Authored materials: https://github.com/mimuc/omm-ws1920

Seminar Advances in Computer Graphics	Winter 2019

As event organizer and supervisor at LMU Munich

Seminar Advanced Media Informatics	Summer 2019, Winter 2021

As supervisor at LMU Munich

Lecture Deep Learning and Artificial Intelligence	Winter 2018

As student tutor at LMU Munich. Authored manuscripts: https://github.com/changkun/ws-18-19-deep-learning-tutorial

Lecture Machine Learning	Summer 2018

As student tutor at LMU Munich. Authored manuscripts: https://github.com/changkun/ss18-machine-learning-tutorial

Lecture Human-computer Interaction	Summer 2015

As student tutor at Southwest University for Nationalities.

OPEN SOURCE CONTRIBUTION

A public statistics indicates that I have earned 18.2k+ stars, 14.2k+ total code commits, 30 contributed open source projects. A public contribution ranking indicates I am a **top 200 developer in Germany** or a **top 100 developer in China**. See github.com/changkun for more authored softwares (including frameworks/tools).

- **Go (98.3k+ stars)**: is an open sourced programming language developed by a team at Google, and have approx. 2 million developer users on global. I am one of the official Go organization member (163 people in total), current maintainer of x/mobile repository, active contributor to language runtime and standard library.
- **fyne (16.5k+ stars)**: is an open sourced cross platform GUI framework written in Go, and I am one of the organization member (12 people in total), mainly contributing to graphics and mobile drivers, performance improvements.
- **The golang.design Initiative (9k+ stars)**: I am the creator of the organization. The organization currently hosts 25 projects. The organization website have 465k+ page views and 66k+ historical viewers in total since Sep 2020.
- **The TalkGo community (15.9k stars)**: I am a core member of the organization. The community organizes weekly public tech talks, currently have 6.35k+ subscribers, organized 132 public talks. I contributed 7 talks, and they are one of the most viewed talks.
- **Go: Under the Hood (3.7k stars)**: I am the author of this open sourced book. The book discusses advanced Go programming, principles of underlying algorithms etc. Writing in progress.
- **Juejin Translation Community (27.8k+ stars)**: Major contributor, translated 50+ articles from English to Chinese.
- **Occasional contributions**: Tensorflow (164+ stars), etcd (39.6k+ stars), etc.

Expertise

Expertise is context- and comparison-dependent. Here states the years of experience in terms of use, also indicates a subjective estimation of the level of expertise (either *intermediate*, *experienced*, or *expert*):

- **Domain**: *Computer graphics* (3D rendering and geometry processing, 3 years of Bachelors level teaching at university, 2 years of Masters level teaching, Blender/OpenGL/Metal/three.js, *experienced*); *Machine learning* (1 year of Masters level teaching at university, Andrew Ng's Deep Learning Specialization Certificate (ID: QGH8ZVJ6J2L2), Sklearn/Tensorflow/PyTorch/etc, *intermediate*); *Data analysis* (3 years of PhD research, numpy/seaborn/pandas/etc., *experienced*); *Web development* (2 years of industrial backend engineering, Go/React/etc., *experienced*).

- **Language**: *Go* (5 years+, *expert*); *Python* (4+ years, *experienced*); *JavaScript/TypeScript* (5+ years, *experienced*); *C/C++* (2+ years, *intermediate*); *LaTeX* (10+ years, *experienced*). I speak native Mandarin; fluent professional English; elementary German.

Publications

- **Changkun Ou**, Andreas Butz. 2022. *Expertise in the Loop Considered Harmful? Human Satisficing is Sufficient to Support Machine Maximizing.* Under review in RecSys '22: 16th ACM Conference on Recommender Systems. ACM, New York, NY, USA, 17 pages.

- **Changkun Ou**, Daniel Buschek, Sven Mayer, Andreas Butz. 2022. *The Human in the Infinite Loop: A Case Study on Revealing and Explaining Human-AI Interaction Loop Failures.* Under review in Mensch und Computer 2022 (MuC'22). ACM, New York, NY, USA, 14 pages.

- Julius Girbig, **Changkun Ou**, and Sylvia Rothe. 2022. *Generative 3D Animation Pipelines: Automating Facial Retargeting Workflows.* In Workshop on "AI-Generated Characters: Putting Deepfakes to Good Use" of CHI '22: ACM CHI Conference on Human Factors in Computing Systems. New Orleans, LA, USA, 4 pages.

- **Changkun Ou**. 2021. *(Generic) Functional Options Pattern.* In the golang.design Initiative Research. 10 pages. https://golang.design/research/generic-option/

- Quancheng Rao, **Changkun Ou**. 2022. *The Handbook of Go Programmer Interview.* China Machine Press. ISBN: 9787111702429.

- **Changkun Ou**, Daniel Buschek, Malin Eiband, Andreas Butz. 2021. *Modeling Web Browsing Behavior across Tabs and Websites with Tracking and Prediction on the Client Side.* arXiv preprint. 10 pages. https://arxiv.org/abs/2103.04694.

- **Changkun Ou**. 2021. *The Ultimate Channel Abstraction.* In the golang.design Initiative Research. 14 pages. https://golang.design/research/ultimate-channel/

- **Changkun Ou**. 2021. *A Concurrent-safe Centralized Pointer Managing Facility.* In the golang.design Initiative Research. 14 pages. https://golang.design/research/cgo-handle/

- **Changkun Ou**. 2021. *Scheduling Function Calls with Zero Allocation.* In the golang.design Initiative Research. 17 pages. https://golang.design/research/zero-alloc-call-sched/

- **Changkun Ou**. 2020. *Pointers Might Not be Ideal as Arguments.* In the golang.design Initiative Research. 10 pages. https://golang.design/research/pointer-params/

- **Changkun Ou**. 2020. *Eliminating A Source of Measurement Errors in Benchmarks.* In the golang.design Initiative Research. 10 pages. https://golang.design/research/bench-time/

- Kai Holländer, Luca Schellenberg, **Changkun Ou**, and Andreas Butz. 2020. *All Fun and Games: Obtaining Critical Pedestrian Behavior Data from an Online Simulation.* In Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems (CHI EA '20). ACM, New York, NY, USA, 9 pages. https://doi.org/10.1145/3334480.3382797

- **Changkun Ou**, Yifei Zhan, Yaxi Chen. 2019. *Identifying Malicious Players in GWAP-based Disaster Monitoring Crowdsourcing System.* In the 2nd International Conference on Artificial Intelligence and Big Data (ICAIBD). IEEE. New York, NY, USA, 10 pages. ⚲ **Best Paper Award**. https://doi.org/10.1109/ICAIBD.2019.8836972

- **Changkun Ou**. 2021. *Modern C++ Tutorial: C++11/14/17/20 On the Fly.* In Github. 89 pages. https://changkun.de/modern-cpp

- Jingyi Li, **Changkun Ou**, Yong Ma. 2019. *Cultivation and Incentivization of HCI Research and Community in China: Taxonomy and Social Endorsements.* In Workshop on "HCI in China: Research Agenda, Education Curriculum, Industry Partnership, and Communities Building" of the 2020 CHI Conference on Human Factors in Computing Systems (CHI EA '19). Glasgow, UK, 7 pages.

- **Changkun Ou**. 2019. *Understanding and Predicting Web Browsing Behavior.* In the Institute of Computer Science. LMU Munich. 70 pages. **Master Thesis**. https://changkun.de/s/thesis/master

- **Changkun Ou**. 2018. *An Introduction to Recent Mobile Affective Inference Techniques: Methods, Applications and Challenges.* In Advanced Seminar Media Computer Science, LMU Munich. 9 pages.

- Matthias Geiger, **Changkun Ou**, Cedric Quintes. 2017. *WatchOut: A Road Safety Extension for Pedestrians on a Public Windshield Display.* Arxiv preprint. 5 pages. https://arxiv.org/abs/1905.05390

- **Changkun Ou**. 2016. *Designing Alternative Contact-free Control Modalities for Smart Watches.* In the Institute of Computer Science. Southwest University of Nationalities. 47 pages. **Bachelor Thesis**. ♀ **Excellent Bachelor Thesis**. https://changkun.de/s/thesis/bachelor

- Yaxi Chen, **Changkun Ou**. 2016. *Combining Touch Biometrics and Motion Sensors for Hand Posture Recognition and User Authentication System.* In Journal of Southwest University for Nationalities (Nature Science Edition). 7 pages. https://doi.org/10.11920/xnmdzk.2016.04.011

- Yaxi Chen, **Changkun Ou**, Zhaoyang Guo. 2014. *Space interactions based on monocular vision and simple gestures.* In Journal of Southwest University for Nationalities (Natural Science Edition). 6 pages. https://doi.org/10.3969/j.issn.1003-4271.2014.06.13

- **Changkun Ou**, Mu Huang, Mengxin Shi, Jiang Cheng. 2014. *A Study in Keep-Right-Except-To-Pass Rule.* In the Mathematical Contest in Modeling (MCM). 35 pages. ♀ **Meritorious Winner**

Public Talks

- Changkun Ou. 2022. *The Decision Maker's Dilemma: or how I stopped struggling with possible choices.* LMU Munich Internal Doctoral Colloquium. Chiemsee, Germany. https://changkun.de/s/dilemma

- Changkun Ou. 2022. *Generics in Go 1.18.* The TalkGo Meetup. Virtual Event. https://changkun.de/s/generics118

- Changkun Ou. 2021. *Can we compute the free-will?.* LMU Munich Internal Doctoral Colloquium. Venice, Italy. https://changkun.de/s/polyred6fold

- Changkun Ou. 2020. *Reliable Benchmarking.* The TalkGo Meetup. Virtual Event. https://changkun.de/talks/202003/gobench.pdf

- Changkun Ou. 2021. *Delicate Dance: Preferences in Interactive Meshing.* LMU Munich Internal Doctoral Colloquium. Virtual Event. https://changkun.de/s/polyred5star

- Changkun Ou. 2020. *A Future of Polygon Reduction.* LMU Munich Internal Doctoral Colloquium. Venice, Italy. https://changkun.de/s/polyred4us

- Changkun Ou. 2020. *Go 2 Generics? A (P)review.* The TalkGo Meetup. Virtual Event. https://changkun.de/talks/202003/go2generics.pdf

- Changkun Ou. 2019. *Technological Outlook.* Lecture Online Multimedia. Munich. https://changkun.de/talks/201912/omm9.pdf

- Changkun Ou. 2019. *Understanding Communicating Sequential Processes.* The TalkGo Meetup. Virtual Event. https://changkun.de/talks/201911/csp.pdf

- Changkun Ou. 2019. *Simplicity is complicated: On the balance of performance and knobs.* LMU Munich Internal Doctoral Colloquium. Vienna, Austria. https://changkun.de/s/polyred2what

- Changkun Ou. 2019. *Real-world Go Concurrency Bugs.* The TalkGo Meetup. Virtual Event. https://changkun.de/talks/201909/bug.pdf

- Changkun Ou. 2019. *Internals of Channel and Select in Go.* The TalkGo Meetup. Virtual Event. https://changkun.de/talks/201908/channel.pdf

- Changkun Ou. 2019. *Identifying Malicious Players in GWAP-based Disaster Monitoring Crowdsourcing System.* ICAIBD. Chengdu, China. https://changkun.de/talks/201905/gwap.pdf

- Changkun Ou. 2019. *A Glimpse to the Advances of Mesh Representation Learning.* Internal Doctoral Colloquium Spring. Bernried, Germany. https://changkun.de/talks/201904/mesh.pdf

- Changkun Ou. 2019. *Understanding and Predicting User Browsing Behavior.* Masters Defence Presentation. Munich, Germany. https://changkun.de/talks/201901/master.pdf

- Changkun Ou. 2018. *On the development of Quantified UX Metric.* Design Workshop II, LMU Munich. Munich, Germany https://changkun.de/talks/201805/qux.pdf

- Changkun Ou. 2018. *Capsule Network with Routing Mechanism.* Advanced Seminar Deep Learning, LMU Munich. Munich, Germany. https://changkun.de/talks/201712/capsnet1.pdf, https://changkun.de/talks/201803/capsnet2.pdf

- Changkun Ou. 2018. *Understanding Generalization in Deep Learning.* Advanced Seminar Deep Learning, LMU Munich. Munich, Germany. https://changkun.de/s/generalize

- Hermann Redich, Patrick Börzel, Isabella Galter, Collin Leiber, Changkun Ou. 2018. *Convolutional Neural Networks from Zero to Hero.* Advanced Seminar Deep Learning, LMU Munich. Munich, Germany. https://changkun.de/talks/201712/cnn.pdf

- Changkun Ou. 2016. *Mathematical Modeling Tutorial.* TouTube. Virtual Events. https://youtube.com/playlist?list=PLwUqqMt5en7c7iZIseCVAS5BX6RPkS-qR

Scholarships & 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*
Outstanding Student Scholarship		Chengdu, China
at SWUN		*Nov. 2015*
Student Innovative Annual Excellent Project		Chengdu, China
at SWUN		*Jun. 2015*
Sichuan Province Computer Production Competition		Chengdu, China
2nd Award		*May 2015*
China National Scholarship		Chengdu, China
at SWUN		*Sep. 2014*
American Mathematical Contest in Modeling(MCM) 2014		Chengdu, China
Meritorious Winner		*Apr. 2014*