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Online version: <https://changkun.de/s/cv>

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Curriculum Vitae

Science and art, life in between

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EDUCATION

LMU Munich

Ph.D. Media Informatics.

Munich, Germany

Feb. 2019 – (exp.) Feb. 2023

LMU Munich

M.Sc. Human-Computer Interaction; overall grade: 1.63 (max. 1.0) between “Very Good” and “Good”

Munich, Germany

Oct. 2016 – Jan. 2019

University of Electronic Science and Technology of China

M.Eng. Software Engineering

Chengdu, China

Aug. 2016 – Sep. 2016

Southwest University for Nationalities

B.Eng. Computer Science; overall grade: 3.74 (max. 4.0), “Top 1 Student”

Chengdu, China

Sep. 2012 – Jul. 2016

University Entrance Exam

Overall grade: 512 (max. 750)

Huaihua, China

Sep. 2000 – Jul. 2012

PROFESSIONAL EXPERIENCE

Research Associate

LMU Munich

Munich, Germany

Apr. 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)

LabEx Technology Ltd

Munich, Germany

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)

Rocketlingo UG

Munich, Germany

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 fault tolerances using machine learning
- **Involved techniques:** TypeScript; WebSocket; Angular; Google Cloud STT and TTS; Sklearn; Voice Recognition; etc

Software Engineer (Intern)

Shiyanlou

Chengdu, China

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

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|--|--------------------------|
| Lecture Computer Graphics | Summer 2020/2021/2022 |
| <i>As teaching assistant and instructor at LMU Munich. Authored materials: https://github.com/mimuc/cg1</i> | |
| Practical Geometry Processing | Winter 2020/2021 |
| <i>As lecturer and instructor at LMU Munich. Authored materials: https://github.com/mimuc/gp</i> | |
| Lecture Information Visualization | Winter 2021 |
| <i>As teaching assistant at LMU Munich. Authored materials: https://github.com/mimuc/infovis</i> | |
| Lecture Online Multimedia | Winter 2019 |
| <i>As teaching assistant and guest speaker at LMU Munich. Authored materials: https://github.com/mimuc/omm-ws1920</i> | |
| Seminar Advances in Computer Graphics | Winter 2019 |
| <i>As event organizer and supervisor at LMU Munich</i> | |
| Seminar Advanced Media Informatics | Summer 2019, Winter 2021 |
| <i>As supervisor at LMU Munich</i> | |
| Lecture Deep Learning and Artificial Intelligence | Winter 2018 |
| <i>As student tutor at LMU Munich. Authored manuscripts: https://github.com/changkun/ws-18-19-deep-learning-tutorial</i> | |
| Lecture Machine Learning | Summer 2018 |
| <i>As student tutor at LMU Munich. Authored manuscripts: https://github.com/changkun/ss18-machine-learning-tutorial</i> | |
| Lecture Human-computer Interaction | Summer 2015 |
| <i>As student tutor at Southwest University for Nationalities.</i> | |

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. <https://changkun.de/research/papers/deepfake.pdf>
- **Changkun Ou**. 2021. *(Generic) Functional Options Pattern*. In the golang.design Research. 10 pages. <https://golang.design/research/generic-option.pdf>
- Quancheng Rao, **Changkun Ou**. 2022. *The Handbook of Go Programmer Interview*. China Machine Press. ISBN: 9787111702429. <https://golang.design/go-questions>
- **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 Research. 14 pages. <https://golang.design/research/ultimate-channel.pdf>
- **Changkun Ou**. 2021. *A Concurrent-safe Centralized Pointer Managing Facility*. In the golang.design Research. 14 pages. <https://golang.design/research/cgo-handle.pdf>
- **Changkun Ou**. 2021. *Scheduling Function Calls with Zero Allocation*. In the golang.design Research. 17 pages. <https://golang.design/research/zero-alloc-call-sched.pdf>
- **Changkun Ou**. 2020. *Pointers Might Not be Ideal as Arguments*. In the golang.design Research. 10 pages. <https://golang.design/research/pointer-params.pdf>
- **Changkun Ou**. 2020. *Eliminating A Source of Measurement Errors in Benchmarks*. In the golang.design Research. 10 pages. <https://golang.design/research/bench-time.pdf>
- 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. <https://changkun.de/research/papers/china.pdf>
- **Changkun Ou**. 2019. *Understanding and Predicting Web Browsing Behavior*. In the Institute of Computer Science. LMU Munich. 70 pages. **Master Thesis**. <https://changkun.de/research/thesis/master.pdf>
- **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. <https://changkun.de/research/papers/emotions.pdf>
- 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/research/thesis/bachelor.pdf>
- 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** <https://changkun.de/research/papers/keepright.pdf>

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/research/talks/202204/dilemma.pdf>
- Changkun Ou. 2022. *Generics in Go 1.18*. The TalkGo Meetup. Virtual Event. <https://changkun.de/research/talks/202203/generics118.pdf>
- Changkun Ou. 2022. *What is A Rational Community Discussion?* The TalkGo Meetup. Virtual Event. <https://changkun.de/research/talks/202203/rational.pdf>
- Changkun Ou. 2021. *Can we compute the free-will?*. LMU Munich Internal Doctoral Colloquium. Venice, Italy. <https://changkun.de/research/talks/202110/polyred6fold.pdf>
- Changkun Ou. 2021. *Delicate Dance: Preferences in Interactive Meshing*. LMU Munich Internal Doctoral Colloquium. Virtual Event. <https://changkun.de/research/talks/202103/polyred5star.pdf>
- Changkun Ou. 2020. *A Future of Polygon Reduction*. LMU Munich Internal Doctoral Colloquium. Venice, Italy. <https://changkun.de/research/talks/202010/polyred4us.pdf>
- Changkun Ou. 2020. *Reliable Benchmarking*. The TalkGo Meetup. Virtual Event. <https://changkun.de/research/talks/202003/gobench.pdf>

- Changkun Ou. 2020. *Go 2 Generics? A (P)review*. The TalkGo Meetup. Virtual Event.
<https://changkun.de/research/talks/202003/go2generics.pdf>
- Changkun Ou. 2020. *A Study on Go Timer Implementation*. The TalkGo Meetup. Virtual Event.
<https://changkun.de/research/talks/202001/timer.pdf>
- Changkun Ou. 2019. *Technological Outlook*. Lecture Online Multimedia. Munich.
<https://changkun.de/research/talks/201912/omm9.pdf>
- Changkun Ou. 2019. *Understanding Communicating Sequential Processes*. The TalkGo Meetup. Virtual Event.
<https://changkun.de/research/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/research/talks/201910/knobs.pdf>
- Changkun Ou. 2019. *Real-world Go Concurrency Bugs*. The TalkGo Meetup. Virtual Event.
<https://changkun.de/research/talks/201909/bug.pdf>
- Changkun Ou. 2019. *Internals of Channel and Select in Go*. The TalkGo Meetup. Virtual Event.
<https://changkun.de/research/talks/201908/channel.pdf>
- Changkun Ou. 2019. *Identifying Malicious Players in GWAP-based Disaster Monitoring Crowdsourcing System*. ICAIBD. Chengdu, China. <https://changkun.de/research/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/research/talks/201904/mesh.pdf>
- Changkun Ou. 2019. *Understanding and Predicting User Browsing Behavior*. Masters Defence Presentation. Munich, Germany. <https://changkun.de/research/talks/201901/master.pdf>
- Changkun Ou. 2018. *On the development of Quantified UX Metric*. Design Workshop II, LMU Munich. Munich, Germany
<https://changkun.de/research/talks/201805/qux.pdf>
- Changkun Ou. 2018. *Capsule Network with Routing Mechanism*. Advanced Seminar Deep Learning, LMU Munich. Munich, Germany. <https://changkun.de/research/talks/201712/capsnet1.pdf>, <https://changkun.de/research/talks/201803/capsnet2.pdf>
- Changkun Ou. 2018. *Understanding Generalization in Deep Learning*. Advanced Seminar Deep Learning, LMU Munich. Munich, Germany. <https://changkun.de/research/talks/201802/generalization.pdf>
- 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/research/talks/201712/cnn.pdf>
- Changkun Ou. 2016. *Mathematical Modeling Tutorial*. TouTube. Virtual Events.
<https://youtube.com/playlist?list=PLwUqqMt5en7c7iZIseCVAS5BX6RPkS-qR>

SCHOLARSHIPS & AWARDS

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|---|-----------------|
| • Papers with Special Recognitions | Munich, Germany |
| • <i>Outstanding Reviews</i> | Nov. 2019 |
| • Siemens AILab Hackathon | Munich, Germany |
| • <i>2nd Winner</i> | Nov. 2017 |
| • China National Scholarship | Chengdu, China |
| • <i>at UESTC</i> | Sep. 2016 |
| • Excellent Bachelor Graduation Thesis Award | Chengdu, China |
| • <i>at SWUN</i> | 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