

INTRODUCTION

I am a Ph.D. candidate in human-computer interaction at the Institute of Informatics, LMU Munich (Germany). My [research](#) focuses on intelligent human-in-the-loop systems and develops machine learning algorithms to exploit human preferential behavior, then support their decision-making process for the greater good. In context, I utilize efficient and robust engineering practices to explore system design trade-offs that can bring actual impact to real users.

EDUCATION

Ph.D. Candidate Media Informatics (Dr. rer. nat.)*LMU Munich*

- **Advisors:** Prof. Dr.-Ing. [Andreas Butz](#) (Erstberichterstatter), Prof. Dr. [Eyke Hüllermeier](#) (Zweitberichterstatter), Prof. Dr.-Ing. [Marc Stamminger](#) (Drittberichterstatter).

Master Student Human-Computer Interaction (M.Sc.)*LMU Munich; overall grade: 1.63 (max. 1.0) between "Very Good" and "Good"*

- **Thesis:** "Understanding and Predicting Web Browsing Behavior"
- **Advisors:** Dr. [Daniel Buschek](#), Dr. [Malin Eiband](#), Prof. Dr. [Heinrich Hußmann](#)

Master Student Software Engineering*University of Electronic Science and Technology of China***Bachelor Student Computer Science and Engineering (B.Eng.)***Southwest University for Nationalities; overall grade: 3.74 (max. 4.0), "Top 1" of 154 students*

- **Thesis:** "Designing Alternative Contact-free Control Modalities for Smart Watches"
- **Advisor:** Prof. Dr. [Yaxi Chen](#)

University Entrance Exam*Overall grade: 512 (max. 750, first/second/third tiers: 520/451/357).*

PROFESSIONAL EXPERIENCE

Software Development Engineer II*Sixt SE*

- **As engineer:** design and developing automated pricing system to support price decisions

Research Associate*LMU Munich*

- **As researcher:** research on human-in-the-loop machine learning 3D graphics systems
- **As teacher:** teach 12 classes (as lecturer/instructor/assistant/tutor), and supervising 20+ student theses and seminars
- **As developer:** develop a 3D mesh processing backend system in collaboration with industry partner [WAY digital solutions](#); 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*

- **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 incumbency.
- **As 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)

Nov. 2017 – Mar. 2018

Rocketlingo UG

Munich, Germany

- **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)

Jun. 2016 – Sep. 2016

Shiyanlou

Chengdu, China

- **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 content creator:** wrote more than 20+ professional educational materials regarding C++
- **Involved techniques:** C++; Python; MongoDB; Collaborate Filtering; Elasticsearch; Logstash; Kibana; Redis; Electron, etc.

OPEN SOURCE ACTIVITIES AND ORGANIZATIONS

I am enthusiastic about the open source movement and active in the Go community. A public [statistics](#) indicates that I have earned 20.8k+ stars, 14.9k+ total code commits, 20 contributed open source projects. A public contribution [ranking](#) indicates I am a **top-200 active user in Germany**. See github.com/changkun for more authored softwares (including frameworks/tools). Here lists a few selected activities and organizations:

- **Go (organization member):** an open sourced programming language developed by a team at Google, and have approx. [2 million developer users](#) in the globe. 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 (organization member):** 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 (founder):** I created the organization. The organization currently hosts 25 software projects and 6 core members. The organization website have 465k+ page views and 66k+ historical viewers in total since Sep 2020.
- **The TalkGo community (organization member):** 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.
- **Occasional contributions:** [Tensorflow](#) (164+ stars), [etcd](#) (39.6k+ stars), etc.

EXPERTISE AND SKILLS

Expertise is context- and comparison-dependent. Here states the years of experience in terms of use, also indicates an 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, *experienced*); *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, *intermediate*). I speak native Mandarin; fluent professional English; elementary German.

SCHOLARSHIPS AND AWARDS

ACM SIGCHI Gary Marsden Travel Awards

Jan. 2023

Full Travel Support

ACM Symposium on Virtual Reality Software and Technology

Nov. 2022

Best Paper Award

ACM SIGCHI Mensch und Computer

Sep. 2022

Honorable Mention Award

ACM SIGCHI Special Recognitions (CHI '20)**Nov. 2019***Outstanding Reviews***Siemens AILab Hackathon****Nov. 2017***2nd Winner**Munich, Germany***China National Scholarship****Sep. 2016***University of Electronic Science and Technology of China**Chengdu, China***Excellent Bachelor Thesis Award****Jun. 2016***Southwest University for Nationalities**Chengdu, China***Best University Graduates Award****Jan. 2016***Sichuan Province**Chengdu, China***Outstanding Student Scholarship****Nov. 2015***Southwest University for Nationalities**Chengdu, China***Annual Excellent Student Innovative Project****Jun. 2015***Southwest University for Nationalities**Chengdu, China***Sichuan Province Computer Production Competition****May 2015***2nd Award**Chengdu, China***China National Scholarship****Sep. 2014***Southwest University for Nationalities**Chengdu, China***Meritorious Winner in American Mathematical Contest in Modeling (MCM' 14)****Apr. 2014***Southwest University for Nationalities**Chengdu, China***TEACHING EXPERIENCE****Lecture Computer Graphics****2020/2021/2022***As teaching assistant and instructor at LMU Munich. For B.Sc. students, approx. 200 students each year.**Summer**Authored materials: <https://changkun.de/s/teach/cg>***Practical Geometry Processing****2020/2021***As lecturer and instructor at LMU Munich. For M.Sc. students, 6 students each year.**Winter**Authored materials: <https://changkun.de/s/teach/gp>***Lecture Information Visualization****2021***As teaching assistant at LMU Munich. For M.Sc. students, approx. 100 students.**Winter**Authored materials: <https://changkun.de/s/teach/iv>***Lecture Online Multimedia****2019***As teaching assistant and guest speaker at LMU Munich. For M.Sc. students, approx. 180 students.**Winter**Authored materials: <https://changkun.de/s/teach/omm>***Seminar Advances in Computer Graphics****2019***As event organizer and supervisor at LMU Munich. For M.Sc. students, 6 students.**Winter***Seminar Advanced Media Informatics****2019/2021***As supervisor at LMU Munich**Summer/Winter***Lecture Deep Learning and Artificial Intelligence****2018***As student tutor at LMU Munich.**Winter**Authored manuscripts: <https://changkun.de/s/teach/dl>***Lecture Machine Learning****2018***As student tutor at LMU Munich.**Summer**Authored manuscripts: <https://changkun.de/s/teach/ml>***Lecture Human-computer Interaction****2015***As student tutor at Southwest University for Nationalities.**Summer***Theses/Seminars Supervision****2020/2021/2022***As supervisor*

- **Bachelor Thesis:** 2022. Shiyi Gou. *Exploring, Assisting, and Improving Human Rationality using Computational Approaches*.
- **Master Thesis:** 2022. Johannes Merkt. *Procedural Modeling with Nodes*.
- **Master Thesis:** 2022. Kehong Deng. *High Dimensional Trajectory Data Interpretation and Visualization*.
- **Bachelor Thesis:** 2022. Nicolas Mogenicato. *On-the-fly Mesh Streaming*.
- **Bachelor Thesis:** 2022. Benjamin Sühling. *Mesh Repairing using Deep Networks*.
- **Bachelor Thesis:** 2022. Zihan Kong. *Real Time Ray Tracing using Generative AI*.
- **Bachelor Thesis:** 2022. Gerhard van Nooy. *PAppearance-preserving Mesh Processing in Hierarchical Networks*.
- **Master Thesis:** 2021. Kevin Nsiesyanji. *Scheduling, Profiling and Optimizing Hybrid Renderer*.
- **Bachelor Thesis:** 2021. Feng Chen. *Exploiting Human Preferences with Reinforcement Learning Approaches*.
- **Master Seminar:** 2021. Darina Cvetanova. *Recent Advances in Neural Rendering for 3D Applications*.
- **Bachelor Thesis:** 2021. Julius Girbig. *Automated Facial Rig Registration for Motion Capture*. Cosupervision: Prof. Dr. Sylvia Rothe.
- **Bachelor Thesis:** 2021. Oliver Möller. *Web User Interface Optimization from Preferential Ratings*.
- **Bachelor Thesis:** 2021. Christian Schmidt. *Progressive BVH Refinement in Interactive Ray Tracing*.
- **Master Thesis:** 2021. Elena Liebl. *Evaluating Human Expertise in 3D Model Simplification*.
- **Master Thesis:** 2021. Samuel Eiler. *Meshless Neural Rendering*.
- **Master Seminar:** 2020. Maksimilians Verbickis *Understanding and Evaluating Human Preferences in 3D Modeling*.
- **Master Seminar:** 2020. David Dodel, Ofek Lewinsohn. *Geometric Processing in Learning*. Cosupervision: Dennis Dietz.
- **Master Seminar:** 2020. Felix Dietz, Daniel Neumann. *Reinforcement Learning in Physics-based Simulation*. Cosupervision: Dennis Dietz.
- **Master Seminar:** 2020. Cecilia Thümmmler. *Human Perception and Preference in 3D Modelling*.

PUBLICATIONS

Proceedings

- **Changkun Ou**, Sven Mayer, Andreas Butz. 2023. *The Impact of Expertise in the Loop for Exploring Machine Rationality*. To appear in the 28th ACM Symposium on Intelligent User Interface (IUI '23). ACM, New York, NY, USA, 15 pages.
- Francesco Chiossi, **Changkun Ou**, Sven Mayer. 2023. *Exploring Physiological Correlates of Visual Complexity Adaptation: Insights from EEG, ECG, and EDA Data for Sensor Fusion Modelling in Virtual Reality Adaptive Systems*. Under review in the Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems (CHI EA '23). ACM, New York, NY, USA, 9 pages.
- Francesco Chiossi, Luke Haliburton, **Changkun Ou**, Andreas Butz, Albrecht Schmidt. 2023. *Short-Form Videos Degrade Our Capacity to Retain Intentions: Effect of Context Switching On Prospective Memory*. In the 2023 ACM Conference on Human Computer Interaction (CHI'23). ACM, New York, NY, USA, 14 pages.
- Dennis Dietz, Carl Oechsner, **Changkun Ou**, Francesco Chiossi, Fabio Sarto, Sven Mayer, Andreas Butz. 2022. *Walk This Beam: Impact of Different Balance Assistance Strategies and Height Exposure on Performance and Physiological Arousal in VR*. In 28th ACM Symposium on Virtual Reality Software and Technology (VRST '22). ACM, New York, NY, USA, Article 32, 12 pages. 🏆 **Best Paper Award**.
<https://doi.org/10.1145/3562939.3567818>
- **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*. In Mensch und Computer 2022 (MuC'22). ACM, New York, NY, USA, 11 pages. 🏆 **Honorable Mention Award**. <https://doi.org/10.1145/3543758.3543761>
- **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>.
- 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>

Books

- **Changkun Ou**. 2023. *The Elements of Go: Under the Hood*. To appear in Posts & Telecom Press. <https://golang.design/under-the-hood/>
- Quancheng Rao, **Changkun Ou**. 2022. *The Handbook of Go Programming Interviews*. China Machine Press. ISBN: 9787111702429. <https://golang.design/go-questions>
- **Changkun Ou**. 2021. *Modern C++ Tutorial: C++11/14/17/20 On the Fly*. In GitHub. 89 pages. <https://changkun.de/modern-cpp>

Articles

- **Changkun Ou**, Sven Mayer, Daniel Buschek, Andreas Butz. 2024. *Rethinking Opinion Measurement Interfaces for Human-in-the-Loop Optimization*. Under review in ACM Transactions on Computer-Human Interaction. ACM, New York, NY, USA, 28 pages.
- 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>

Technical Reports

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

Miscellaneous

- 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/paper/deepfake.pdf>
- 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/paper/china.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/paper/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**, Mu Huang, Mengxin Shi, Jiang Cheng. 2014. *A Study in Keep-Right-Except-To-Pass Rule*. In the Mathematical Contest in Modeling. 35 pages. 🏆 **Meritorious Winner** <https://changkun.de/paper/keepright.pdf>

Presentations

- 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/talk/dilemma.pdf>
- Changkun Ou. 2022. *Generics in Go 1.18*. The TalkGo Meetup. Virtual Event. <https://changkun.de/talk/generics118.pdf>
- Changkun Ou. 2022. *What is A Rational Community Discussion?* The TalkGo Meetup. Virtual Event. <https://changkun.de/talk/rational.pdf>

- Changkun Ou. 2021. *Can we compute the free-will?*. LMU Munich Internal Doctoral Colloquium. Venice, Italy. <https://changkun.de/talk/polyred6fold.pdf>
- Changkun Ou. 2021. *Delicate Dance: Preferences in Interactive Meshing*. LMU Munich Internal Doctoral Colloquium. Virtual Event. <https://changkun.de/talk/polyred5star.pdf>
- Changkun Ou. 2020. *A Future of Polygon Reduction*. LMU Munich Internal Doctoral Colloquium. Venice, Italy. <https://changkun.de/talk/polyred4us.pdf>
- Changkun Ou. 2020. *Reliable Benchmarking*. The TalkGo Meetup. Virtual Event. <https://changkun.de/talk/gobench.pdf>
- Changkun Ou. 2020. *Go 2 Generics? A (P)review*. The TalkGo Meetup. Virtual Event. <https://changkun.de/talk/go2generics.pdf>
- Changkun Ou. 2020. *A Study on Go Timer Implementation*. The TalkGo Meetup. Virtual Event. <https://changkun.de/talk/timer.pdf>
- Changkun Ou. 2019. *Technological Outlook*. Lecture Online Multimedia. Munich. <https://changkun.de/talk/omm9.pdf>
- Changkun Ou. 2019. *Understanding Communicating Sequential Processes*. The TalkGo Meetup. Virtual Event. <https://changkun.de/talk/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/talk/polyred2what.pdf>
- Changkun Ou. 2019. *Real-world Go Concurrency Bugs*. The TalkGo Meetup. Virtual Event. <https://changkun.de/talk/bug.pdf>
- Changkun Ou. 2019. *Internals of Channel and Select in Go*. The TalkGo Meetup. Virtual Event. <https://changkun.de/talk/channel.pdf>
- Changkun Ou. 2019. *Identifying Malicious Players in GWAP-based Disaster Monitoring Crowdsourcing System*. ICAIBD. Chengdu, China. <https://changkun.de/talk/gwap.pdf>
- Changkun Ou. 2019. *A Glimpse to the Advances of Mesh Representation Learning*. Internal Doctoral Colloquium Spring. Bernried, Germany. <https://changkun.de/talk/polyred1step.pdf>
- Changkun Ou. 2019. *Understanding and Predicting User Browsing Behavior*. Masters Defence Presentation. Munich, Germany. <https://changkun.de/talk/master.pdf>
- Changkun Ou. 2018. *On the development of Quantified UX Metric*. Design Workshop II, LMU Munich. Munich, Germany. <https://changkun.de/talk/qux.pdf>
- Changkun Ou. 2018. *Capsule Network with Routing Mechanism*. Advanced Seminar Deep Learning, LMU Munich. Munich, Germany. <https://changkun.de/talk/capsnet1.pdf>, <https://changkun.de/talk/capsnet2.pdf>
- Changkun Ou. 2018. *Understanding Generalization in Deep Learning*. Advanced Seminar Deep Learning, LMU Munich. Munich, Germany. <https://changkun.de/talk/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/talk/cnn.pdf>
- Changkun Ou. 2016. *Mathematical Modeling Tutorial*. TouTube. Virtual Events. <https://changkun.de/s/playlist/math-modeling>

Theses

- **Changkun Ou.** 2019. *Understanding and Predicting Web Browsing Behavior*. In the Institute of Computer Science. LMU Munich. 70 pages. **Master Thesis.** <https://changkun.de/thesis/master.pdf>
- **Changkun Ou.** 2016. *Designing Alternative Contact-free Control Modalities for Smart Watches*. In the Institute of Computer Science and Engineering. Southwest University of Nationalities. 47 pages. **Bachelor Thesis.** 🏆 **Excellent Bachelor Thesis.** <https://changkun.de/thesis/bachelor.pdf>

OTHER ACTIVITIES

Reviewing

CHI '20 - CHI'23

The ACM CHI Conference on Human Factors in Computing Systems

Reviewing

ICMI' 2022

The ACM International Conference on Multimodal Interaction

Reviewing

IMWUT' 2022

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies

Reviewing

IFIP TC13 International Conference on Human-Computer Interaction

INTERACT' 2021

Student volunteer

The ACM CHI Conference on Human Factors in Computing Systems

2020

Student volunteer

Conference Smart Graphics 2015

Aug. 2015