

Ou Changkun

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Born on October 25th 1993 in Zhijiang/Hunan/China

People's Republic of China citizenship

Single

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Note: colored texts contains clickable URL.

Curriculum Vitae

Science and art, life in between

changkun.de 🌐

@changkun 🐦

Introduction

Changkun Ou is a research assistant at the University of Munich. His research topics are interdisciplinary in computational geometry, imitation learning, and human-computer interaction. In particular, he would like to leverage three-dimensional polygonal mesh representation learning and visual preference elicitation to develop efficient algorithms or industrial tools for 3D modeling and rendering.

Education

University of Munich (LMU)

Ph.D. Candidate in Media Computer Science.

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

Master of Science in Computer Science; GPA: 2.05 of 1.00

University of Munich

Master of Science in Human-Computer Interaction (HCI); GPA: 1.63 of 1.00, "gut".

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.

University of Electronic Science and Technology of China (UESTC)

Master of Engineering in Software Engineering

Southwest University for Nationalities (SWUN)

Bachelor of Engineering in Computer Science; Grade: 3.74 of 4.0, "Top 1 Student".

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](#)

Munich, Germany

Feb. 2019 – Present

Munich, Germany

Apr. 2018 – Present

Munich, Germany

Oct. 2016 – Jan. 2019

Chengdu, China

Aug. 2016 – Sep. 2016

Chengdu, China

Sep. 2012 – Jul. 2016

- **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.

First Middle School of Zhijiang

Senior Middle School; With university entrance examination (Gaokao)

Huaihua, China

Mar. 2010 – Jul. 2012

Changsha Foreign Language School

Senior Middle School

Changsha, China

Aug. 2009 – Feb. 2010

Second Middle School of Zhijiang

Junior Middle School

Huaihua, China

Sep. 2006 – Jul. 2009

Chengnan Primary School of Zhijiang

Primary School

Huaihua, China

Sep. 2000 – Jul. 2006

Work Experiences

Research Assistant

University of Munich

Munich, Germany

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)

[LabEx](#)

Chengdu, China

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)

[MagicLingua](#)

Munich, Germany

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 fault 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

Shiyanlou

Software Engineer (Intern)

Chengdu, China

Jun. 2016 – Sep. 2016

- **Recommendation System:** Online course recommendation system; Python; MongoDB; Collaborate Filtering
- **Distributed Log System:** Elasticsearch; Logstash; Kibana; Redis
- **Cross Platform Desktop Client:** Electron based development for macOS/Windows/Linux
- **Teaching Material Writing:** Modern C++ based teaching material writing

Academic Tutor

SWUN Lecture “Human-Computer Interaction”

Chengdu, China

Jul. 2015

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.
- **occamy:** The project implements a modern remote desktop proxy written in Go. It provides web browser GUI for connecting vnc/rdp/ssh servers.
- **gomat:** The package provides cache-aware lock-free tiling optimization matrix utilities in Go.
- **sched:** The package for a high performance reliable task scheduling in Go.
- **Check my GitHub homepage for more projects:** github.com/changkun

Public Activities

- **Presenter** Glasgow, UK
at *The ACM CHI Conference on Human Factors in Computing Systems* May. 2019
- **Student Volunteer** Chengdu, China
at *Conference Smart Graphics 2015* Aug. 2015
- **Guigu Lab Team Leader** Chengdu, China
at *SWUN* Sep. 2014 – Jun. 2015
- **Mathematical Modeling Association Academic Vice Director** Chengdu, China
at *SWUN* Oct. 2012 – Jun. 2014

Honors & Awards

- **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

Personal Interests

- **Open source contributions:** Writting open source book; Contributing and maintaining open source softwares
- **Video blogging:** Making videos on [YouTube channel](#)
- **Blogging and knowledge sharing:** on <https://changkun.de>
- **Video gaming:** Sony Playstation and Nintendo Switch player

References

- **Prof. Andreas Butz:** currently supervise for Master studies at LMU Munich Medieninformatik, Munich, Germany
- **Prof. Heinrich Hußmann:** exchange student course “Human-Computer Interaction I” at Southwest University for Nationalities, Chengdu, China
- **Dr. Daniel Buschek:** currently supervise for Master thesis at LMU Munich Medieninformatik, Munich, Germany
- **Malin Eiband:** currently supervise for Master thesis at LMU Munich Medieninformatik, Munich, Germany
- **Florian Lachner:** supervised for individual practical course at LMU Munich Medieninformatik, Munich, Germany
- **Prof. Yaxi Chen:** supervised for bachelor thesis at Southwest University for Nationalities, Chengdu, China
- **Prof. Wei Zhou:** supervised for bachelor thesis at Southwest University for Nationalities, Chengdu, China