Zhaoxun Liu

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EDUCATION

BEIHANG UNIVERSITY | School of Computer Science and Engineering
B.Eng. in Computer Science
Sep.2019 - Jul.2023 (Expectedly) | Beijing, CN
GPA: 3.6827 / 4.0 Major GPA: 3.7313 / 4.0 Average Score: 88 / 100

LINK

Github Page:// *SprLau*
Github Repos:// *SprLau*
LinkedIn:// *zhaoxun-springs-liu*
Facebook:// *SprLau16*

SKILLS

PROGRAMMING

15k+ Lines (Overall):
Java • C • C++ • Python •
JavaScript • C# • HTML • CSS •
Verilog • Assembly • LaTeX

FRAMEWORKS & TOOLS

PyTorch • React •
NumPy • Matplotlib •
OpenGL • SteamVR •
Git • Vim • Unity

PUBLICATIONS

TEMPORAL TRANSFORMER NETWORKS WITH SELF-SUPERVISION FOR ACTION RECOGNITION

Yongkang Zhang, Jun Li*, Guoming Wu, Han Zhang, Zhiping Shi, Zhaoxun Liu, Zizhang Wu
Submitted to IEEE Transactions on Multimedia, 2022 - *In Peer-review*

CROSSKEYS: TEXT ENTRY FOR VIRTUAL REALITY USING A SINGLE CONTROLLER VIA WRIST ROTATION

Zhaoxun Liu*, Haowen Zheng, Chenyu Gu
Submitted to IEEE TVCG (Transactions on Visualization and Computer Graphics), 2022 - *In Progress*

RESEARCH

STATE KEY LABORATORY OF VIRTUAL REALITY TECHNOLOGY AND SYSTEMS | Researcher

Junior, Sep. 2021 - Present | BUAA, Beijing, CN
Instructed by *Prof. Lili Wang, BUAA*.
We devised CrossKeys, a novel, efficient, and handy text entry technique for virtual reality (VR) environments using a single controller via wrist rotation. Our CrossKeys unprecedentedly employs the three-dimensional space a virtual environment can provide and outperforms the state-of-the-art method with a breakthrough in terms of speed (17.73 WPM) and error rate (0.30% NCER). Our CrossKeys also has a wider application scenario where users can enter text in virtual environments while in moderate motion like walking.
My responsibilities mainly are:

- Organizing the work and publishing to IEEE TVCG, 2022 as first author and corresponding author.
- Fully responsible for idea realization and coding, including responsive components implementation, auto-completing prediction algorithm design, user interface design, ergonomics-mathematical deduction, and 3D modeling, etc.
- Experiment design and conduction.
- Paper writing and reviewing.

STATE KEY LABORATORY OF SOFTWARE DEVELOPMENT ENVIRONMENT: COMPUTER VISION RESEARCH GROUP | Research Intern

Sophomore, Mar.2021 – Dec.2021 | BUAA, Beijing, CN
Instructed by Ph.D Jun Li, CNU and led by *Prof. Xianglong Liu, BUAA*.
We developed Cross-Attention ReID, a state-of-the-art approach to realize pedestrians' re-identification based on implementing training with large-scale datasets generated by single-channeled IR cameras and three-channeled RGB cameras. Our highlight is the unmatched accuracy, thanks to our cross-analysis and comprehensive retrieval of IR and RGB data.
My responsibilities mainly are:

- Idea realization, code implementation and debugging.
- To learn a robust and discriminative cross-modality representation for visible-infrared person re-identification, I applied methods and theories such as Intra-Modality Weighted-Part Aggregation (IWPA), which learns discriminative part-aggregated features by mining the contextual part relation, and Cross-modality Graph Structured Attention (CGSA), which enhances the feature by incorporating the neighborhood information across two modalities, to high-performance and robust code.
- Quantitative analysis and results assessment. I was assigned to test models with large-scale datasets like SYSU-MM01 and RegDB, and the outcome was, as we expected, unmatched compared with other approaches. Our average accuracy is

95.60% while the previous most state-of-the-art approach can only achieve 92.14%.
- For further research, we plan to get more advanced in improving the performance of our Cross-Modality from a mathematical perspective. Hopefully, we can higher the average accuracy to be stably over 96%.

BNRIST AND SCHOOL OF SOFTWARE | Research Intern

Sophomore, Oct.2020 - Present | Tsinghua University, Beijing, CN
Instructed by ***Prof. Feng Xu, THU*** and M.S. Yuxiao Zhou, THU.
We refined a CVPR accepted project "Monocular Real-time Full Body Capture with Inter-part Correlations" as my incipient computer vision research.
My responsibilities mainly were:

- Looking for parts that have room to be refined, and implementing unsupervised training via differentiable renderers.
- Quantitative analysis with PCA (Principal Component Analysis) and cross-datasets tests with datasets like Basel Face Model and 3DMM Face Model.
- Providing additional paperwork support, such as translation and verbal modification.

STATE KEY LABORATORY OF VIRTUAL REALITY TECHNOLOGY AND SYSTEMS | Research Apprentice

Freshman, Nov.2019 – Apr.2020 | BUAA, Beijing, CN
Instructed by ***Prof. Xukun Shen, BUAA***, worked with M.S. Zhiyuan Su, BUAA.
We aided fluid reconstructions and edits for monocular videos with OpenGL.
My responsibilities mainly were:

- Running testing datasets and recording test results.
- Learning about relative technologies and skills as an apprentice.

SELECTED COURSEWORK

"IT IS VIRTUAL, IT IS REAL" | "Introduction to Computer Science and Ethics", Coursework Excellency Award

Freshman, 2019, BUAA, Beijing, CN
This essay discusses several promising positive aspects of development in Virtual Reality technology and respective ethical concerns, both theoretically and pragmatically.
The acceptance rate of Coursework Excellency Award is 10%.
GitHub Link (Click to Visit): BUAA-Introduction-to-Computer-Science-and-Ethics-2019

WORD-FREQUENCY STATISTICAL ANALYSIS | "Data Structure", Top Class Performance Bonus

Freshman, 2020, BUAA, Beijing, CN
I developed a tool to analyze the similarity between two text materials based on a statistical comparison between writing styles and preferences in writers' choosing words. My work was strictly tested by "Dream of the Red Chamber", one of the most complex and renowned Chinese traditional novels, and performed well enough.
The bonus condition is to rank top 20 in over 400.
GitHub Link (Click to Visit): BUAA-Data-Structure-Coursework-2020

EXPERIENCE

TEACHING ASSISTANT | "Data Structure" for Freshmen, 2021

Sophomore, Feb.2021 - Jul.2021 | BUAA, Beijing, CN

- My responsibilities were designing coursework assignments, testing the auto-test platform, and solving unexpected problems reported by students.

CHIEF CELLIST | BUAA Symphony Orchestra

Sophomore, Sep.2019 – Present | BUAA, Beijing, CN

- Won "The First Prize" in "The 9th National University Students Arts Performance Competition" as a leader.
- My responsibilities are helping relatively unskilled members to improve their playing, formulating and deciding how we play, and building a reliable relationship between professional conductors and our orchestra members.
- Elected as "Pivotal Member" in 2021.

AWARDS & CERTIFICATES & STANDARD TESTS

2019	Silver Medal	BUAA Basketball Association
2019	Coursework Excellency Award, BUAA	2nd/50, "Introduction to Computer Science and Ethics"
2020	The First Prize	The 9th National University Students Arts Performance Competition
2021	Score 110 (R30 + L30 + S23 + W27)	ETS TOEFL iBT
2021	Score 324 (V 155 + Q 169 + W 4.0)	ETS GRE
2021	Scholarship	"Excellent Student Cadres" of Beihang University

MAJOR COURSES

Mathematical Analysis
Score: 98/100

Linear Algebra
Score: 87/100

C Programming Language
Score: 92/100

Data Structure
Score: 92/100, Selected Coursework, Teaching Assistant

Discrete Mathematics
Score: 92/100

Probability Theory and Mathematical Statistics
Score: 87/100

Fundamental Physics
Score: 92/100

Introduction to Computer Science and Ethics
Score: 92/100, Selected Coursework

Complex Networks
Score: 90/100

Introduction to Intelligent Computing
Score: 90/100

Data Mining
Score: 96/100

Virtual Reality
Score: 93/100

Introduction to Artificial Intelligence
Score: 90/100

Operating Systems
Score: 86/100

Object-Oriented Design and Development
Score: 84/100

Social Computing
Score: 90/100

Compiler Technology
Score: 79/100

Parallel Computing
Score: 92/100

Design and Analysis of Algorithms
Score: 82/100

Signal Processing and Information Inference
Ongoing

Computer Network
Ongoing

IOT and Big Data System Design
Ongoing

Software Engineering
Ongoing