NIANLONG LI

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RESEARCH INTERESTS

I am a 5th-year PhD student in the Beijing Key Lab of Human-Computer Interaction at the Institute of Software, Chinese Academy of Sciences (ISCAS), advised by Prof. Feng Tian and Associate Prof. Teng Han. My research interests lie in the area of human-computer interaction (HCI), focusing on interaction techniques in virtual and augmented reality (VR/AR), understanding and modeling human behaviors. Before coming to ISCAS, I completed my B.S. degree in Software Engineering at Xiangtan University in 2016.

Research Interests: VR/AR Interaction, Haptics and Illusions, Multimodal Interaction, Human Behaviors Modeling

EDUCATION

University of Chinese Academy of Sciences *Sep 2016 - Present*
Ph.D. in Computer Science
Advisor: Feng Tian

Xiangtan University *Sep 2012 - Jul 2016*
B.Sc. in Software Engineering

PUBLICATIONS

Journal Articles

[J.3]. **Nianlong Li**, Jin Huang, Feng Tian*, Guozhong Dai, Hongan Wang. Monitoring motor symptoms in Parkinson's disease via instrumenting daily artifacts with inertia sensors. *CCF Transactions on Pervasive Computing and Interaction* 1.2 (2019): 100-113.

[J.2]. **Nianlong Li**, Jin Huang, Feng Tian*, Guozhong Dai, Hongan Wang. ICOMDT: An Interaction Computational Model for Dynamic Task. *Journal of Software*, 2019 (10): 2.

[J.1]. Wei Sun, Jin Huang, **Nianlong Li**, Xiangmin Fan, Feng Tian*, Guozhong Dai, Hongan Wang. BCI Assisted Dynamic Target Selection Technique. *Journal of Software*, 2018, 29(Suppl.(2)): 108–119.

Conference Papers

[C.6]. **Nianlong Li**, Han-Jong Kim, Luyao Shen, Feng Tian, Teng Han*, Xing-Dong Yang, Tek-Jin Nam. HapLinkage: Prototyping Haptic Proxies for Virtual Hand Tools Using Linkage Mechanism. *Proceedings of the 33nd Annual ACM Symposium on User Interface Software and Technology* (UIST '20). Best Paper Honorable Mention Award (Top 5%).

[C.5]. **Nianlong Li**, Teng Han*, Feng Tian, Jin Huang, Minghui Sun, Pourang Irani, Jason Alexander. Get a Grip: Evaluating Grip Gestures for VR Input using a Lightweight Pen. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (CHI '20). Best Paper Honorable Mention Award (Top 5%).

[C.4]. Jin Huang, Feng Tian*, **Nianlong Li**, Xiangmin Fan. Modeling the Uncertainty in 2D Moving Target Selection. *Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology* (UIST '19).

[C.3]. **Nianlong Li**, Feng Tian*, Jin Huang, Xiangmin Fan, Hongan Wang. 2D-BayesPointer: An Implicit Moving Target Selection Technique Enabled by Human Performance Modeling. *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems* (CHI EA '18).

[C.2]. Qikun Ma, Shiyang Wang, Jie Liu*, **Nianlong Li**. InteractiveSubtitle: Subtitle Interaction for Language Learning. *Proceedings of the Sixth International Symposium of Chinese CHI* (ChineseCHI '18).

[C.1]. Yunzhi Li, Yinan Xu, Xiang Li, Jie Liu*, **Nianlong Li**. TapFlick: Combining Tap and Flick for Text Entry on Touchscreen Devices. *Proceedings of the Sixth International Symposium of Chinese CHI* (ChineseCHI '18).

PATENTS

[P.3]. A Target Selection Technology in 3D Environment based on Motion Trend Information. Feng Tian, **Nianlong Li**, Jin Huang, Hongan Wang. Filed: 2020-06-29. Patent No. CN 2020106088083.

[P.2]. A Data Processing Method and Diagnostic Device for Assisting Disease Diagnosis based on Daily Necessities. Feng Tian, Xiangmin Fan, **Nianlong Li**, Junjun Fan, Hongan Wang. Filed: 2018-12-12. Patent No. CN 2018115182867.

[P.1]. A Moving Target Selection Technology based on Correction of User Performance Model. Jin Huang, **Nianlong Li**, Feng Tian, Hongan Wang Filed: 2018-06-01. Patent No. CN 2018105586224.

TECHNICAL SKILLS

Programming Languages	C/C++/C♯, Java, JavaScript/ThreeJS, Python, MATLAB
Software & Tools	Unity3D, SPSS, FreeCAD, LaTeX

RESEARCH EXPERIENCE

Enhancing the Interaction with Occluded Objects in VR with Virtual Mirrors Mar 2020 - Sep 2020

Supervisor: Assoc.Prof. Teng Han & Prof. Feng Tian

- Leveraging reflection of mirrors to observe and select distant or occluded objects in VR.
- Explored how to place mirror and measured the effect of the mirror's orientation on users' performance.
- Compared with teleport techniques and presented demo applications.

Prototyping Haptic Proxies for Virtual Hand Tools Using Linkage Mechanism May 2019 - Apr 2020

Supervisor: Assoc.Prof. Teng Han & Prof. Feng Tian

- Designed a prototyping framework based on linkage mechanism, that provides typical motion templates and haptic renderers to facilitate proxy design of virtual hand tools.
- Provided usable components including the software tool and hardware modules for the framework.
- Demonstrated various scenario examples of haptic proxy design.

Evaluating Grip Gestures for VR Input using a Lightweight Pen Jun 2019 - Sep 2019

Supervisor: Assoc.Prof. Teng Han & Prof. Feng Tian

- Investigated the characteristics and potential of using a pen as a VR input device.
- Conducted two studies to identify a suitable grip posture for a pen and evaluate its performance in target selections.
- Demonstrated potential applications enabled by VR pen input and grip postures.

A Ray-Casting Selection Technique Based on Process Enhancement for Dynamic Environment in VR Oct 2018 - Apr 2019

Supervisor: Asst.Prof. Jin Huang & Prof. Feng Tian

- Designed a ray-casting selection technique leveraging the characteristics of motion process to infer the user's intended target.
- Compared with other state-of-the-art techniques (i.e. Snap-To and IntenSelect).

Monitoring Motor Symptoms in Parkinson's disease via Instrumenting Daily Artifacts May 2018 - Sep 2018

Supervisor: Assoc.Prof. Xiangmin Fan & Prof. Feng Tian

- Explored to combine the IMU sensors with the daily artifacts to monitor the motor fuctuations of PD.
- Building classification and regression model to identify the motor symptoms levels.
- Conducted a semi-structured interview to understand how the self-tracking data used in clinic.

Modeling the Uncertainty in 2D Moving Target Selection Aug 2017 - Apr 2018

Supervisor: Asst.Prof. Jin Huang & Prof. Feng Tian

- Extended the Ternary-Gaussian model in 2D moving target selection tasks.
- Built an implicit target selection technique *2D-BayesPointer* and compared with other state-of-the-art techniques (i.e. Bubble Cursor and Comet).

HONORS & AWARDS

China National Scholarship for Doctoral students	*Nov 2020*
Best Paper Honorable Mention Award (top 5%), ACM UIST 2020	*Aug 2020*
Best Paper Honorable Mention Award (top 5%), ACM CHI 2020	*Mar 2020*
The second "Schlumberger" Cup Debug Competition, Winning Award	*Dec 2016*
Outstanding Graduates of Hunan Province	*May 2016*
CCF Elite Collegiate Award	*Oct 2015*
National English Competition for College Students, Second Prize	*May 2015*
China National Scholarship for Undergraduates	*Nov 2014*
ACM-ICPC Asia Regional Contest, Bronze Medal (Xi'an Site, Guangzhou Site)	*Oct 2014-Nov 2014*

SERVICES

Teaching Assistant

UCAS - User Interface Design, Development & Evaluation (251M6008H)	*Spring 2018*
UCAS - Intelligent Human Computer Interaction (251M5009H)	*Fall 2017*

Volunteer

Public Science Day of Chinese Academy of Sciences @ISCAS	*May 2019*
National "Software and Network" Summer Camp for College Students @ISCAS	*Jul 2018*
ChineseCHI @Montreal, Canada	*May 2018*

Reviewing

Chinagraph 2018 / CHI 2020 / CHI LBW 2020 / ICMI 2020 / CHCI 2020 / CHI 2021