

HYUNYOUNG KIM

Assistant Professor in Computer Science, University of Birmingham

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SUMMARY

I am an Assistant Professor in the School of Computer Science at the University of Birmingham. I am interested in providing tools for everyone to fabricate interactive objects for their unique problems. My research method encompasses developing fabrication tools, proposing novel applications such as shape-changing interfaces using on the tools, and conducting user studies to identify usability problems of the tools. I have experience both in academia and industry, focusing on HCI and UX design. I have a strong academic record since my PhD. I published full papers at CHI¹ and UIST. I am also supervising four PhD students and actively involved academic communities. I have been working in five different countries (UK, Denmark, France, Germany, and South Korea), broadening my research skills and network.

EDUCATION

	2020	Université Grenoble Alpes, Grenoble, France
<i>Ph.D.</i>		Thesis: User-Centered Design of Shape-Changing Controls Advisors: Céline Coutrix, Anne Roudaut
	2011	KAIST, Daejeon, South Korea
<i>M.Sc.</i>		Thesis: Gesture-Recognition Interface with Keyboard Embedded IR Modules Advisor: Minsoo Hahn
	2009	Sungkyunkwan University, Suwon, South Korea
<i>Bachelor</i>		Thesis: Personalized Comment Spam Filtering Using Clustering Advisor: Jee-Hyong Lee

PUBLICATIONS

PEER REVIEWED CONFERENCE PAPERS

- C11 Daniel Ashbrook, Wei-Ju Lin, Nicholas Bentley, Diana Soponar, Valkyrie Savage, Zeyu Yan, Lung-Pan Cheng, Huaishu Peng, **Hyunyoung Kim**. Rhapsod: Automatically Embedding Fiber Materials into 3D Prints for Enhanced Interactivity. In Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology, **UIST '24** [pdf] [code]
- C10 Valkyrie Savage, Carlos Tejada, Mengyu Zhong, Raf Ramakers, Daniel Ashbrook, **Hyunyoung Kim**. AirLogic: Embedding Pneumatic Computation and I/O in 3D Models to Fabricate Electronics-Free Interactive Objects. In Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology, **UIST '22** [pdf] [code]
- C9 Aaron Visschedijk, **Hyunyoung Kim**, Carlos E. Tejada, Daniel Ashbrook. ClipWidgets: 3D-printed Modular Tangible UI Extensions for Smartphones. In Proceedings of the Sixteenth International Conference on Tangible, Embedded, and Embodied Interaction, **TEI '22** [pdf]
- C8 **Hyunyoung Kim**, Aluna Everitt, Carlos E. Tejada, Mengyu Zhong, Daniel Ashbrook. MorpheesPlug: A Toolkit for Prototyping Shape-Changing Interfaces. In proceedings of the 2021 CHI Conference on Human Factors in Computing Systems, **CHI '21** (26%) [pdf] [code]
- C7 Miriam Greis, **Hyunyoung Kim**, Andreas Korge, Céline Coutrix, Albrecht Schmidt. SplitSlider: a Tangible Interface to Input Uncertainty. 17th IFIP TC.13 International Conference on Human-Computer Interaction, **INTERACT '19**, Reviewers Choice Award (top 3%) [pdf] [design]
- C6 **Hyunyoung Kim**, Patricia Deud Guimaraes, Céline Coutrix, Anne Roudaut. ExpanDial: Designing a Shape-Changing Dial. In Proceedings of the 2019 Designing Interactive Systems Conference, **DIS '19** (acc.25%) [pdf] [build instruction]

¹ CHI is the most prestigious venue in HCI, with higher impact factor than journals.

- C₅ **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut. Morphees+: Studying Everyday Reconfigurable Objects For the Design and Taxonomy of Shape-Changing UI. In proceedings of the 2018 CHI Conference on Human Factors in Computing Systems, **CHI '18** (acc.25%), Honourable Mention Award (top 5%) [[pdf](#)] [[dataset](#)]
- C₄ **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut. KnobSlider: Design of a Shape-Changing UI for Parameter Control. In proceedings of the 2018 CHI Conference on Human Factors in Computing Systems, **CHI '18** (acc.25%) [[pdf](#)] [[build instruction](#)]
- C₃ **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut. KnobSlider: Design of a Shape-Changing Device Grounded on Users' Needs. In Actes de la 28^{ème} conférence francophone sur l'Interaction Homme-Machine, **IHM '16**, ACM Press [[pdf](#)] (French)
- C₂ **Hyunyoung Kim**, Kuenhwan Kwak, Jongwoo Jung, Insik Myung, and Minsoo Hahn. Tablaction: collaborative brainstorming system with stylus-fingertip interactions on tablet PCs. In Proceedings of the 9th ACM SIGGRAPH Conference on Virtual-Reality Continuum and its Applications in Industry, ACM VRCAI '10 [[pdf](#)]
- C₁ **Hyunyoung Kim**, Donghoon Lee, Jeehyung Lee. Personalized Comment Spam Filtering Using Clustering, Korea Intelligent System Society KIIS '08 [[pdf](#)] (Korean)

JOURNAL ARTICLES

- J₃ Don Pubudu Vishwana Joseph Jayakody, Tak Yu Lau, **Hyunyoung Kim**, Kai Tang, Lauren E.J. Thomas-Seale. Topological awareness towards collision-free multi-axis curved layer additive manufacturing. Additive Manufacturing, Volume 88, 2024 [[pdf](#)]
- J₂ Hasti Seifi, Steven A. Vasquez, **Hyunyoung Kim**, Pooyan Fazli. First-Hand Impressions: Charting and Predicting User Impressions of Robot Hands, ACM Transactions on Human-Robot Interaction, 2023 [[pdf](#)] [[interactive dataset](#)]
- J₁ **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut. KnobSlider: Design of a Shape-Changing Parameter Control UI and Study of User Preferences on Its Speed and Tangibility, Frontiers Robotics and AI, 2019 [[pdf](#)]

BOOK CHAPTERS

- B₂ **Hyunyoung Kim**, Changhee Cho, Jisu Kim, Sanghyun Park, Jinsul Kim, Kuinam J. Kim. Localizing a Flying Object on Target Place Using Heterogeneous Binary Sensors. In Mobile and Wireless Technology 2015, ISBN: 978-3-662-47669-7 [[pdf](#)]
- B₁ Sanghyun Park, **Hyunyoung Kim**, Jinsul Kim. An Innovative Detection Method Integrating Hybrid Sensors for Motorized Wheelchairs. Information Science and Applications, 2015, ISBN: 978-3-662-46578-3 [[pdf](#)]

WORK-IN-PROGRESS

- W₂ Miriam Greis, **Hyunyoung Kim**, Andreas Korge, Céline Coutrix, Albrecht Schmidt. Extending Input Space of Tangible Dials and Sliders for Uncertain Input. In Proceedings of the Thirteenth International Conference on Tangible, Embedded, and Embodied Interaction, **TEI '19 WiP** [[pdf](#)]
- W₁ **Hyunyoung Kim**, Imin Kim, Jinsul Kim. Designing the Smart Foot Mat and Its Applications: as a User Identification Sensor for Smart Home Scenarios, Advanced Science and Technology Letters, Vol.87 (Art, Culture, Game, Graphics, Broadcasting and Digital Contents 2015), ISSN: 2287-1233 [[pdf](#)]

OTHER PUBLICATIONS

- O₇ Hasti Seifi, Steven A. Vasquez, **Hyunyoung Kim**, Pooyan Fazli.. Charting Visual Impression of Robot Hands. arXiv [[pdf](#)]
- O₆ **Hyunyoung Kim**. Fostering Design Process of Shape-Changing Interfaces. In The 31st Annual ACM Symposium on User Interface Software and Technology Adjunct Proceedings, **UIST '18 Doctoral Symposium** [[pdf](#)]
- O₅ **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut. KnobSlider: A Shape-Changing Interface for Parameter Control, Workshop on Shape Changing Robotic Structures and Interfaces, **IROS '18**
- O₄ **Hyunyoung Kim**, Mauro Aliva, Thomas Kosch, Céline Coutrix, Anne Roudaut. Using Shape-Changing Interfaces to Foster Inclusive Education for Visually Impaired People. Position paper for the Inclusive

Educational Technologies: Emerging Opportunities for People with Visual Impairments, workshop at SIGCHI Conference on Human Factors in Computing Systems, CHI '18, [pdf]

- O3 **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut. Empowering Makers to Create Reconfigurable Objects. Position paper for the Maker Movements, Do-It-Yourself Cultures and Participatory Design: Implications for HCI Research, workshop at SIGCHI Conference on Human Factors in Computing Systems, CHI '18, [pdf]
- O2 **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut, Leveraging Everyday Deformation for Shape-Changing Interfaces. Position paper for the Sharing Perspectives on the Design of Shape-Changing Interfaces, workshop at SIGCHI Conference on Human Factors in Computing Systems, CHI '16, [pdf]
- O1 **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut. Future Shape-Changing TUIs: Brainstorming & Origami Workshop. Workshop proposal for Second European Tangible Interaction Studio, ETIS '16 [pdf]

PATENTS

- P4 **Hyunyoung Kim**, Hee-Won Jung, Device and method for transmitting electronic key thereof, US11178214B2 (Granted)
- P3 Eun-young Lim, **Hyunyoung Kim**, Yeon-hee ROH, Joo-kyung Woo, Young-shil Jang, User terminal device for providing electronic shopping service and methods thereof, US10311503B2, US11017458B2 (Granted)
- P2 Sung-Jin Park, **Hyunyoung Kim**, User terminal, external apparatus, data transceiving system, and data transceiving method, US9622076B2 (Granted)
- P1 Jae-Woo Ko, Tae-hwan WI, Hee-Won Jung, **Hyunyoung Kim**, Bo-seok MOON, Management server and method for controlling device, user terminal apparatus and method for controlling device, and user terminal apparatus and control method thereof, US9775038B2 (Granted)

TEACHING

- Module lead* 2024/25. Research Topics in HCI [06-34568], University of Birmingham. Class contact: 22h
- Module lead* 2023/24. Research Topics in HCI [06-34568], University of Birmingham. Class contact: 22h
- Co-lecturer* 2022/23. Mobile and Ubiquitous Computing [06-29289], University of Birmingham. Class contact: 6h
- 2022/23. Human-Computer Interaction Theory and Practice [06-30512], University of Birmingham.
- 2021/22. Mobile and Ubiquitous Computing [06-29289], University of Birmingham. Class contact: 5h
2021. DIKU User Interface Technology (Master's course), University of Copenhagen. Module lead: Daniel Ashbrook. Class contact: 10h
- Guest Lecturer* 2021. Communication and IT program's Bachelor Project in HCC, University of Copenhagen. Module lead: Hasti Seifi. Class contact: 1h
2020. DIKU User Interface Technology (Master's course), University of Copenhagen. Module lead: Daniel Ashbrook. Class contact: 1h
2020. Communication and IT program's Bachelor Project in HCC, University of Copenhagen. Module lead: Daniel Ashbrook. Class contact: 2h
- Co-lecturer* 2016-17. Fachpraktikum: a MSc course for tangible user interface, University of Stuttgart. Co-lectured with Alexander Voit, Pascal Knierim, and Céline Coutrix. Class contact: 22.5h
- Teaching Assistant* 2015. C++ instruction for Bachelors, Chonnam National University. Class contact: 3h
- Instructor* 2011. Circuit design seminar, basics from soldering to implementing, for undergraduate lab interns (South Korea), Class contact: 4h

PRIOR APPOINTMENTS

- Postdoc Researcher* Jan 2020-Sep 2021 University of Copenhagen, Copenhagen, Denmark
Research on shape-changing interfaces and novel fabrication methods.
- Visiting Researcher* Jun-Jul 2017, Nov 2017-Apr 2018 University of Bristol, Bristol, UK
Project: Physical 3D modelling tool using Lego-like bricks. It involved scanning structures of bricks and transferring the data to CAD software, aiming to reduce try-and-error in physical prototyping.
- Apr 2016-Sep 2017 University of Stuttgart, Stuttgart, Germany

<i>Visiting Researcher</i>	Advised two bachelor students' theses Lectured a Master's course for tangible user interfaces
	2014-2015 Chonnam National University, Gwangju, South Korea
<i>Researcher</i>	Research smart textile interface Developed a part of a gunfire positioning system
	2011-2013 Samsung Electronics, Suwon, South Korea
<i>UX Designer</i>	Conducted user research and designed UX for Smart Home (demonstrated at IFA '13, CES '13), Smart LED, Mobile Ads & Commerce, Endoscopic Device & Service.
	2010 Samsung Software Membership, Seoul, South Korea
<i>Student Researcher</i>	Designed and implemented new interaction techniques, focusing on adding physical interactions to mobile applications
	2006 Korea Mart, Tokyo, Japan
<i>Intern</i>	Implemented the company's website and shopping mall

PHD SUPERVISION

<i>Sep 2022 -</i>	Nicholas Bentley
<i>Apr 2023 -</i>	Don Jayakody. Co-advising with Dr Laurence Thomas-Seale
<i>Feb 2021 -</i>	Khawla Jammaz A Aljammaz. Co-advising with Prof Chris Baber

THESIS MENTORING

<i>Masters Thesis</i>	2024. Mohammed Hisham Jaleel, Madina Guliyeva, Apoorva Koderi Narasimha, Bismah Najeeb, Sanjana Ninan, Fahmi Prasetyo, Viannis Murphy Caxton Sahayaraj 2023. Minli Zhang, Dayu Guo, Shinjini Ghosh, Megha Patani, Yangwei Xu, Zhanyuan Liu, Xiangyi Zhou, Anna Daley 2022. Zhuoxue Chen, Rhys Jacka, Junjie Liu, Ruitong Yang, Xiaoxu Zhou 2021. Mengyu Zhong, Aaron Visschedijk, Diana Soponar, Dimitrios Galinos
<i>Bachelors Thesis</i>	2024. Kitunde Abayomi, Valeriia Dashkevich, Gokul Menon, Zeerak Pervez, Megan Renshaw, Roshaan Sothilingam, Shruti Veeranki 2023. Yujing Chen, Ho Jim, Zeyang Zhang 2017. Haris Causegic, Andreas Korge

EXTERNAL RESEARCH GRANTS

<i>G2</i>	Royal Society. Research Grants 2024 Round 2. RGS\R2\242402. Advancing Biodegradable End-User Devices Through Digital Fabrication Techniques. 15,393.52 GBP
<i>G1</i>	Royal Society. International Exchanges 2024 Global Round 1. IES\R1\241195. Computational Design of Interactive Pneumatic Shape-Changing Interfaces. 12,000 GBP

AWARDS AND OTHER GRANTS

<i>Feb 2024</i>	Paul and Yuanbi Ramsay Research Fund. Replicating electronic end-user devices with plant materials. School of Computer Science, University of Birmingham. 1,511.28 GBP
<i>Apr 2023</i>	Birmingham International Engagement Fund (BIEF). Covering travel to Korean research institutes. University of Birmingham. 2,620 GBP
<i>Feb 2022</i>	Paul and Yuanbi Ramsay Research Fund. Pneumatic 3D-Printed Computing. School of Computer Science, University of Birmingham. 3,100 GBP
<i>Sep 2019</i>	Reviewers Choice Award. INTERACT 2019 (top 3% of >300 submissions)
<i>Mar 2019</i>	ACM SIGCHI Student Travel Grant. 1800 USD
<i>Apr 2018</i>	Honourable Mention Award. ACM CHI 2018 (top 5% of >2500 submissions)
<i>Mar 2017</i>	Grant for research abroad. Université Grenoble Alpes. 3000 EUR
<i>Mar 2017</i>	ACM-W Scholarship. Grant for female students travelling to CHI conference. 1200 USD
<i>2011-2013</i>	Employee of the Month. UX Lab, DMC R&D Center, Samsung Electronics. 3 times
<i>2009-2010</i>	National scholarship. KAIST
<i>Aug 2005</i>	Korea National Robot Soccer Mirost League. 3rd place. Korea Robot Soccer Association

Feb 2005 Champions League MiroSot Small League. 1st place. Kangnam University
 2004-2008 Jang Yeong-Sil Scholarship. Full tuition for four years based on the marks at Korean nationwide university entrance exam (1st grade, top 4%), Sungkyunkwan University

SERVICE

Org. Committee TEI '24
Prog. Committee CHI '24, CHI '23, CHI LBW '22, CHI '21, TEI WiP '21, TEI '20
External reviewer CHI '25, TEI '25, CHI '17 '19-'23, UIST '18 '20-'24, SCF '24, TEI '17 '19-'23, DIS '20, MobileHCI '18, NordiCHI '20 '22, ISS '18-'19, INTERACT '19
Instructor 2023. Work experience week for Y12 students. University of Birmingham. Volume: 3h
Organizer 2022-23. Weekly research meeting, HCC Group, University of Birmingham
 2020-21. Weekly research meeting, HCC Section, University of Copenhagen
Examiner 2020. External course examiner for two courses. University of Copenhagen. Volume: 9.75h
Mentor 2015. Girls' Day: Science project for teenage girls in cooperation with Bachelor students. Volume: 4h
 2011. Science competition for female undergraduates and high school students. Volume: 8h

INVITED TALKS

2023 Open Lab, Newcastle University, UK. Host: Abigail Durrant
 2023 University of Leeds, UK. Host: Zhiqiang Zhang
 2023 University of Bristol, UK. Host: Anne Roudaut
 2023 Sungkyunkwan University, South Korea. Host: Sung-Ah Kim
 2023 Yonsei University, South Korea. Host: Byungjoo Lee
 2023 Naver, South Korea. Host: Yong-Ho Kim
 2023 Seoul National University, South Korea. Host: Jinwook Seo
 2023 Kyung Hee University, South Korea. Host: Seongjae Oh, Sangkeun Park
 2023 KAIST, South Korea. Host: Andrea Bianchi
 2023 UNIST, South Korea. Host: Jaeyeon Lee
 2023 University of Seoul, South Korea. Host: Hyunggu Jung
 2021 University of Cardiff, UK. Host: Parisa Eslambolchilar
 2019 Human-Centered Computing Section, University of Copenhagen. Denmark. Host: Daniel Ashbrook
 2019 Morphing Matter Lab, Carnegie Mellon University. USA. Host: Lining Yao
 2019 Human-Centered Ubiquitous Media Lab, LMU Munich. Germany. Host: Albrecht Schmidt
 2019 Tangible Media Group, MIT Media Lab. USA. Host: Hiroshi Ishii
 2019 HCI Engineering Group, MIT CSAIL. USA. Host: Stefanie Mueller
 2018 Media Interaction Lab, University of Applied Sciences Upper Austria. Austria. Host: Michael Haller

SPECIFIC SKILLS

Fabrication 3D printing, Autodesk Fusion, laser cutting
Programming Processing, Python, C#, C/C++, Matlab, Java, HTML/CSS/Javascript, MySQL
Electronics Arduino, Eagle CAD, circuit design, artwork
Statistics Experimental design, R, Excel
User Research Pairwise comparison, focus group, brainstorming, usability test, task observation, wizard of oz
UX Design Scenarios and use cases, personas, wireframe, user flow, Axure, Omnigraffle, Balsamiq, Flowella
Visual Design Illustrator, Photoshop, Premiere Pro

PERSONAL INTERESTS

Painting and Making · Piano · Snorkeling · Video games

December 20, 2024