

# HYUNYOUNG KIM

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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 CHI<sup>1</sup> 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  
*Ph.D.*                  Thesis: User-Centered Design of Shape-Changing Controls  
                          Advisors: Céline Coutrix, Anne Roudaut
- 2011                    KAIST, Daejon, South Korea  
*M.Sc.*                  Thesis: Gesture-Recognition Interface with Keyboard Embedded IR Modules  
                          Advisor: Minsoo Hahn
- 2009                    Sungkyunkwan University, Suwon, South Korea  
*Bachelor*              Thesis: Personalized Comment Spam Filtering Using Clustering  
                          Advisor: Jee-Hyong Lee

## PUBLICATIONS

### PEER REVIEWED CONFERENCE PAPERS

- C.10                  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](#)]
- C.9                    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](#)]
- C.8                    **Hyunyoung Kim**, Carlos E. Tejada, Aluna Everitt, 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](#)]
- C.7                    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](#)]
- C.6                    **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](#)]
- C.5                    **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](#)]

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

- C.4 **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](#)]
- C.3 **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut. KnobSlider: Design of a Shape-Changing Device Grounded on Users' Needs. In Actes de la 28<sup>ème</sup> conférence francophone sur l'Interaction Homme-Machine, **IHM '16**, ACM Press [[pdf](#)] (French)
- C.2 **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](#)]
- C.1 **Hyunyoung Kim**, Donghoon Lee, Jeehyung Lee. Personalized Comment Spam Filtering Using Clustering, Korea Intelligent System Society KIIS '08 [[pdf](#)] (Korean)

#### JOURNAL ARTICLE

- J.2 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](#)]
- J.1 **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

- B.2 **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](#)]
- B.1 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

- W.2 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](#)]
- W.1 **Hyunyoung Kim**, Ilmin 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

- O.7 Hasti Seifi, Steven A. Vasquez, **Hyunyoung Kim**, Pooyan Fazli.. Charting Visual Impression of Robot Hands. arXiv [[pdf](#)]
- O.6 **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](#)]
- O.5 **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut. KnobSlider: A Shape-Changing Interface for Parameter Control, Workshop on Shape Changing Robotic Structures and Interfaces, **IROS '18**
- O.4 **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](#)]
- O.3 **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](#)]
- O.2 **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]

- O.1 **Hyunyoung Kim**, Céline Coutrix, Anne Roudaut. Future Shape-Changing TUIs: Brainstorming & Origami Workshop. Workshop proposal for Second European Tangible Interaction Studio, ETIS '16 [pdf]

## FILED AND GRANTED PATENTS

- P.6 **Hyunyoung Kim**, Hee-Won Jung, Device and method for transmitting electronic key thereof, US11178214B2
- P.5 **Hyunyoung Kim**, Tae-hwan WI, Method and device for transmitting information related to event, WO2013154294A1
- P.4 **Hyunyoung Kim**, Tae-hwan WI, User terminal device and system for performing user customized health management, and methods thereof, WO2013154294A1
- P.3 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
- P.2 Sung-Jin Park, **Hyunyoung Kim**, User terminal, external apparatus, data transceiving system, and data transceiving method, US9622076B2
- P.1 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

## TEACHING

- Co-lecturer* 2023. Mobile and Ubiquitous Computing [06-29289], University of Birmingham. Class contact: 6h  
2022. Human-Computer Interaction Theory and Practice [06-30512], University of Birmingham.  
2022. 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: ??h
- 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 APPOINTMENT

- 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.
- Visiting Researcher* Apr 2016-Sep 2017 University of Stuttgart, Stuttgart, Germany  
Advised two bachelor students' theses  
Lectured a Master's course for tangible user interfaces
- Researcher* 2014-2015 Chonnam National University, Gwangju, South Korea  
Research smart textile interface  
Developed a part of a gunfire positioning system

<i>UX Designer</i>	2011-2013	Samsung Electronics, Suwon, South Korea
		Conducted user research and designed UX for Smart Home (demonstrated at IFA '13, CES '13), Smart LED, Mobile Ads & Commerce, Endoscopic Device & Service.
<i>Student Researcher</i>	2010	Samsung Software Membership, Seoul, South Korea
		Designed and implemented new interaction techniques, focusing on adding physical interactions to mobile applications
<i>Intern</i>	2006	Korea Mart, Tokyo, Japan
		Implemented the company's website and shopping mall

## PHD SUPERVISION

<i>Apr 2023 -</i>	Don Jayakody. Co-advised with Laurence Thomas-Seale
<i>Nov 2022 -</i>	Andrew Fentem. Co-advised with Chris Baber
<i>Sep 2022 -</i>	Nicholas Bentley. Co-advised with Robert Hendley
<i>Feb 2021 -</i>	Khawla Jammaz A Aljammaz. Co-advised with Chris Baber

## THESIS MENTORING

<i>Masters Thesis</i>	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. Aaron Visschedijk, Diana Soponar, Dimitrios Galinos
<i>Bachelors Thesis</i>	2023. Yujing Chen, Ho Jim, Zeyang Zhang
	2017. Haris Causegic, Andreas Korge

## HONOURS AND AWARDS

<i>May 2023</i>	Paul and Yuanbi Ramsay Research Fund. Converting Sketches to Mechanical Joints Using Deep Generative Models. School of Computer Science, University of Birmingham. 4,185 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 MiroSot League. 3rd place. Korea Robot Soccer Association
<i>Feb 2005</i>	Champions League MiroSot Small League. 1st place. Kangnam University
<i>2004-2008</i>	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

<i>Org. Committee</i>	TEI '24
<i>Prog. Committee</i>	CHI '24, CHI '23, CHI LBW '22, CHI '21, TEI WiP '21, TEI '20
<i>External reviewer</i>	CHI '17 '19-'23, UIST '18 '20-'23, TEI '17 '19-'23, DIS '20, MobileHCI '18, NordiCHI '20 '22, ISS '18-'19, INTERACT '19
<i>Instructor</i>	2023. Work experience week for Y12 students. University of Birmingham. Volume: 3h
<i>Organizer</i>	2022-23. Weekly research meeting, HCC Group, University of Birmingham
	2020-21. Weekly research meeting, HCC Section, University of Copenhagen
<i>Examiner</i>	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 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, Fusion 360, Inventor, SketchUp, 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

November 1, 2023