

# Ozgun Kilic Afsar

## Education

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<b>Uppsala University (UU)</b>	Uppsala, Sweden
PhD Affiliate, <i>Materials Science and Engineering, Division of Microsystems Technology</i>	2019-24
— In joint SSF (Swedish Foundation for Strategic Research) funded project with KTH	
<b>Royal Institute of Technology (KTH)</b>	Stockholm, Sweden
PhD Candidate, <i>Human Computer Interaction, Division of Media Technology and Interaction Design</i>	2019-24
— Completed 1 year of Research Engineer position and pre-doc (Fall 2018-19)	
<b>Royal College of Art (RCA)</b>	London, UK
Master of Arts, <i>Information Experience Design</i> , GPA 4.0/4.0	2012-15
Master of Arts, <i>Innovation Design Engineering</i>	
<b>Sabanci University (SU)</b>	Istanbul, Turkey
Bachelor of Industrial Design, GPA 3.67/4.0	2007-11
Bachelor of Arts, <i>Minor in Art Theory and Criticism</i> , High Honors	
— Outstanding Achievement Sakip Sabanci Scholarship	

## Selected Experience

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<b>Massachusetts Institute of Technology (MIT)</b>	Stockholm, Sweden
<i>Research Affiliate, MIT Media Lab, Tangible Media Group</i>	01/21– present
— Research, concept development, prototyping, academic publications	
<b>Massachusetts Institute of Technology (MIT)</b>	Cambridge, MA
<i>Visiting PhD Student, MIT Media Lab, Tangible Media Group</i>	01/20 – 01/21
— Research, hardware training (Shima Seiki MACH2XS WholeGarment) prototyping, academic publications, workshops and exhibitions	
<b>Uppsala University (UU)</b>	Uppsala, Sweden
<i>Visiting PhD Student, Project: Soft Milli-robots   Advisor: Prof. Klas Hjort</i>	09/19 – 12/19
— <b>Designing Fiber-based Milli-robots:</b>	
<ul style="list-style-type: none"><li>• Prototyped fiber reinforced pneumatic artificial muscle fibers</li><li>• Developed liquid alloy based high resistance and highly sensitive strain sensing in microtubular elastomeric structures with induced twisting</li><li>• Developed multi-step surface treatment method for adhering non-elastomeric components to PDMS substrates</li></ul>	
<b>Royal Institute of Technology (KTH)</b>	Stockholm, Sweden
<i>Research Engineer, Project: Robotic Wireless Materials   Advisor: Kia Hook, Klas Hjort</i>	10/18 – 06/19
— <b>Designing Elastomer-based Soft Robots:</b>	
<ul style="list-style-type: none"><li>• Developed fabrication method for flat pneumatic milli-actuators with fiber reinforcement</li><li>• Prototyped modular assembly of soft robotic actuator units</li><li>• Explored multimodal haptic feedback (vibration, texture, compression)</li><li>• Presented results at a workshop with the industry stakeholders including Ericsson, ABB Robotics, Sandvik, Vattenfall AB, IKEA</li></ul>	
<b>Cell-Free Tech / Open Cell</b>	London, UK
<i>UI/UX Lead, London Labs for Life Science Companies</i>	10/16 – 01/18
<b>Yamaha Design Studio x Royal College of Art</b>	London, UK
<i>Research Engineer, Project: Sound with Creative Intention   Commissioner: Yamaha</i>	08/15 – 08/16
<b>Ideal Standard Group</b>	London, UK
<i>Research Engineer, Project: Biosensors Research for Product Development</i>	01/15– 06/15

## Relevant Skills

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**Software:** Autodesk Maya (+Arnold, Octane), Fusion 360, Solidworks, Adobe Suite, MATLAB, Blender, 3D Studio Max Rhino/Grasshopper, Houdini, RealFlow, LaTeX, Python, Processing, Arduino, Max/MSP, COMSOL, Webflow

**Hardware:** Microcontrollers (Adafruit NRF52840, Arduino), actuators (pneumatics, hydraulics, linear motors, piezo motors), sensors (EMG, EEG, ECG, strain gauge, piezo, force cells)

**Laboratory:** Instron mechanical testing, Thinky planetary and centrifugal mixing, Soft lithography, Plasma surface treatment, wet etching

**Fabrication:** Digital prototyping and manufacturing of polymers (specialized to elastomers), digital and physical prototyping of textiles, machine-knitting, 3D printing, fiber extrusion, spray deposition of conductive elastomers, fiber-reinforced soft robotic actuators

**Languages:** Turkish (native), English (adv.), German (adv.), Swedish (conv.), Spanish (beg.)

## Publications

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**Ozgun Kilic Afsar**, A. Shtarbanov, H. Mor, K. Nakagaki, J. Forman, K. Modrei, S. Hee Jeong, K. Hjort, K. Höök, and Hiroshi Ishii. 2021. OmniFiber: Integrated Fluidic Fiber Actuators for Weaving Movement based Interactions into the ‘Fabric of Everyday Life’ In The 34th Annual ACM Symposium on User Interface Software and Technology (UIST '21). ACM, 1010–1026.

**Ozgun Kilic Afsar\***, M. L. J. Søndergaard\*, M. Balaam, Material experiences of menstruation through symbiotic technologies, Materials Experience II, 2021, 147-152.

**Ozgun Kilic Afsar\***, K. Cotton\*, Y. Luft, P. Syal, and F. B. Abdesslem. 2021. SymbioSinging: Robotically transposing singing experience across singing and non-singing bodies. In Creativity and Cognition (C&C '21). ACM, Article 52.

**Ozgun Kilic Afsar\***, H. Mor, C. Honnet and Hiroshi Ishii. “Choreographic Interfaces: Wearable Approaches to Movement Learning in Creative Processes.” ACM ICPS, 2021.

M. L. J. Søndergaard, **Ozgun Kilic Afsar**, M. C. Felice, N. C. Woytuk, and M.e Balaam. 2020. Designing with Intimate Materials and Movements: Making "Menarche Bits". In Proceedings of the 2020 ACM Designing Interactive Systems Conference (DIS '20). ACM 587–600. (*The paper won Best Paper Award at ACM DIS'20.*)

M. Balaam, N. C. Woytuk, M. C. Felice, **Ozgun Kilic Afsar**, A. Ståhl, and M. L. J. Søndergaard. 2020. Intimate Touch. ACM Interactions 27, 6 (November - December 2020), 14–17.

C. Bogdan, V. Tsaknaki, C. Windlin, M. C. Felice, **Ozgun Kilic Afsar**, S. Eriksson, Y. Fernaeus, and P. Sanches. 2020. Programming for Moving Bodies. Proceedings of the 11th Nordic Conference on Human-Computer Interaction: Shaping Experiences, Shaping Society. ACM, Article 132, 1–3.

K. Höök, S. Eriksson, M. L. J. Søndergaard, M. C. Felice, N. C. Woytuk, **Ozgun Kilic Afsar**, V. Tsaknaki, and A. Ståhl. 2019. Soma Design and Politics of the Body. In Proceedings of the Halfway to the Future Symposium 2019 (HTTF 2019). ACM, Article 1, 1–8.

## Conference Presentations & Invited Talks

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Carnegie Mellon University, Morphing Matter Lab. Public Gues Lecture, “*Shaping and Being Shaped by Fabric Machines*”. February 8, 2021.

ACM UIST’21. Research Paper Presentation at ACM Symposium on User Interface Software and Technology, “*OmniFiber: Integrated Fluidic Fiber Actuators for Weaving Movement-based Interactions into the Fabric of Everyday Life*”. October 12 – 14, 2021.

ACM C&C’21. Research Paper Presentation at ACM Creativity and Cognition, “*SymbioSinging: Robotically transposing singing experience across singing and non-singing bodies*”, June 2021.

KTH Royal Institute of Technology, PhD Seminar, “*Translating, Transferring and Proprioceiving Somatics by Polyhaptic Notations*”. April 29, 2021.

E-Stitches Berlin. Vision Talk, “*Shaping and Being Shaped by Computing Fabrics*”. June 3, 2021.

## Patents

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**Ozgun Kilic Afsar**, A. Shtarbanov, H. Mor, K. Nakagaki, J. Forman, K. Modrei, S. Hee Jeong, K. Hjort, K. Höök, and Hiroshi Ishii. System Design and Apparatus for Morphing Microfluidic Fibers with Strain Tunability. Provisional Patent, filed November 5, 2021.

**Ozgun Kilic Afsar**. System Design and Apparatus for Respiratory Regulation Device. TurkPatent 2017 08798.

## Selected Honors & Achievements

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Two Best Paper Awards at ACM's Designing Interactive Systems Conference, ACM DIS 2018 and DIS 2020

QEPrize, The Queen Elisabeth Prize for Engineering, Finalist. <https://qeprize.org/winners/event-gallery/qeprize-presentation-2013>

— Presented sinewave automata, Floe, at the QEPrize Finalist Party at Tate Modern, London (07/12)

Royal College of Art, Outstanding Graduate Student. Information Experience Design Programme, 2015

Tubitak Undergraduate Scholarship for Outstanding Achievement, 2007 – 2011

Recipient of Sabanci University Excellence Merit Metin Sabancı Scholarship, 2007 – 2011

15th place in Maths & Sciences, 91st place in the overall out of 1.7 million entrants in the nation-wide University Entrance Exams (OSYM), Turkey, 2007

## Teaching Experience & Mentoring

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**Royal Institute of Technology (KTH), Teaching Assistant**

Human Computer Interaction, *DH 1621 Introduction to Human Computer Interaction (BSc)* Fall 2021

Human Computer Interaction, *DH 2628 Interaction Design Methods (MSc)* Spring 2021

Degree Projects at Human Computer Interaction, *Mentoring (MSc Thesis)*

Human Computer Interaction, *DH 2629 Interaction Design As a Reflective Practice (MSc)* Spring 2019

Human Computer Interaction, *DH 1621 Introduction to Human Computer Interaction (BSc)*

## Media

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Chandler David L., “*New fibers can make breath-regulating garments*”. **MIT News Office**, October 15, 2021. (Web Article and Interview) <https://news.mit.edu/2021/fibers-breath-regulating-1015>

Gonick, M., “*Robotic fibers can make breath-monitoring garments*”. **MIT Youtube**, October 15, 2021. (Web Video Story) [https://www.youtube.com/watch?v=JDT7Nt\\_sBqQ](https://www.youtube.com/watch?v=JDT7Nt_sBqQ)

Bonifacic, I., “*MIT researchers create fabric that can sense and react to its wearer's movement*”. **Engadget**, October 16, 2021. (Web) <https://www.engadget.com/mit-omnifiber-172907843.html/>

SciTechDaily, “*Robotic OmniFibers: New Fibers Can Make Breath-Regulating Garments*”. **SciTechDaily**, October 15, 2021. (Web) <https://scitechdaily.com/robotic-omnifibers-new-fibers-can-make-breath-regulating-garments/>

Hiserman, J. (PT), “*A Touching Experience*”. **Spectrum Ergonomics**, November, 2021. (Web Podcast, 2 Episodes) <https://anchor.fm/spectrum-ergonomics/episodes/A-Touching-Experience--Part-One-e1a80nd> (Part 1)  
<https://anchor.fm/spectrum-ergonomics/episodes/A-Touching-Experience--Part-Two-e1a812m> (Part 2)

Nugent, J., “*Robotic Textiles in Action: OmniFiber*”. **Azo Materials**, November 2, 2021. (Web Interview) <https://www.azom.com/article.aspx?ArticleID=20898>

White, R., “*Researchers designed a fabric that comes to life when you breathe — Strictly Robots*”. **Mashable**, November 10, 2021. (Web) <https://mashable.com/video/omnifibers-breathing-fabric-mit-researchers>

Shtarbanov, A., “*Project OmniFiber*”. **Hackaday**, October 28, 2021. (Web) <https://hackaday.io/project/179845-flowio-platform/log/199725-project-omnifiber>

TMS, *“Fluidic yarn system for haptic measurements”*. **TMS Market Intelligence on Advanced Materials**, October 15, 2021. (Monthly Newsletter) <https://www.textilemedia.com/smart-textiles-and-wearables/latest-news/fluidic-yarn-system-for-haptic-measurements/>

Owen J., *“New fibre senses and responds to movement”*. **WTIN**, November 8, 2021. (Web Article and Interview) <https://www.wtin.com/article/2021/november/081121/new-fibre-senses-and-responds-to-movement/>

WTI, *“New Fibres Make Breath-Regulating Garments”*. **Wearable Technology Insights**, October 19, 2021. (Web) <https://www.wearabletechnologyinsights.com/articles/24987/new-fibres-make-breath-regulating-garments?stv1=1%3A265842%3A20008>

Nisa, J.U., *“This New Omnifiber Fabric Can Capture And Replay Wearers’ Breathing Patterns”*. **Wonderful Engineering**, October 18, 2021. (Web) <https://wonderfulengineering.com/this-new-omnifiber-fabric-can-capture-and-replay-wearers-breathing-patterns/>

Dziarkach, A., *“Muscle memory! Scientists have created clothes from smart threads”*. **VoA (Voice of America)**, October 23, 2021. (Web Interview and TV Show) <https://www.golosameriki.com/a/detali-10232021/6282706.html>

Printed Electronics World, *“New Fibres Make Breath-Regulating Garments”*. **Printed Electronics World**, October 19, 2021. (Web) <https://www.printedelectronicsworld.com/articles/24987/new-fibres-make-breath-regulating-garments>

TechnoPixel, *“New Technological Fabric from MIT: OmniFiber that Detects Human Movement!”*. **TechnoPixel**, October, 2021. (Web) <https://www.technopixel.org/new-technological-fabric-from-mit-omnifiber-that-detects-human-movement/>

Sengupta, D., *“MIT Researchers Design a Soft, Robotic Fiber That Can React to Wearers’ Body Movements”*. **Beebom**, October 17, 2021. (Web) <https://beebom.com/mit-researchers-design-robotic-fiber-reacts-wearers-body-movements/>

Gigazine, *“Robot fiber that records muscle movements and reproduces them for others is developed”*. **Livedoor News**, October 19, 2021. (Web) <https://news.livedoor.com/article/detail/21052137/>

Hedlund, A., *“Robotic textiles for everything from breathing recovery to feeling surfaces in Space”*. **Uppsala University News**, October 19, 2021. (Web Article and Interview) <https://www.uu.se/en/news/article/?id=17678&typ=artikel>

Sould, H., *“Portable textile robot muscles help singers with the breathing technique”*. **Royal Institute of Technology, KTH News**, November 29, 2021. (Web Article and Interview) <https://www.kth.se/aktuellt/nyheter/barbara-textila-robotmuskler-hjalper-sangare-med-andningstekniken-1.1123682>

Sebambo, K., *“Audio sculptures that modify your perception of the world”*. **Design Indaba**, July 13, 2015. (Web) <http://www.designindaba.com/articles/creative-work/audio-sculptures-modify-your-perception-world>

Ideal Standard News Press, *“Ground-breaking study by Ideal Standard Reveals How Design and Function Impact our Perception of Beauty”*. **Ideal Standard**, July 13, 2015. (Web) <https://www.idealstandard.lt/news-press/newspress/2015-03-11-project-perceive.html>