

# Danula Hettiachchi

Crowdsourcing · Social Computing · HCI · Fair & Responsible AI

Melbourne, 3000, Victoria, Australia

☎ (+61) 474435815 | ✉ contact@danulahettiachchi.com | 🏠 danulahettiachchi.com | 📷 danula

🌐 danula | 🎓 Danula Hettiachchi

I am a researcher interested in crowdsourcing, social computing and fairness in automated decision-making. I have extensive research experience in human-computer interaction, including quantitative methods and user studies complemented with prior industry experience in machine learning, data engineering, software development and analytics.

## Education

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- PhD in Engineering, School of Computing and Information Systems, The University of Melbourne *Melbourne, Australia*  
Thesis on task assignment using worker cognitive ability and context to improve data quality in crowdsourcing. Supervised by Dr. Jorge Goncalves and Prof. Vassilis Kostakos. *Feb 2018 - Feb 2021*
- BSc (Hons) Engineering, Dept. of Computer Science and Engineering, University of Moratuwa *Sri Lanka*  
First Class. Specialised in Computer Science and Engineering. *Oct 2011 - Apr 2016*

## Work Experience

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- Research Fellow, RMIT University *Melbourne, Australia*  
Working at the ARC Centre of Excellence for Automated Decision-Making and Society (ADM+S) and RMIT School of Computing Technologies (Academic Level B2). *Mar 2021 - Present*
- Applied Scientist Intern, Amazon Web Services (AWS) *Seattle, US (Remote)*  
Part of Amazon Science team overseeing Amazon GroundTruth, Mechanical Turk and Augmented AI. *Jun 2020 - Nov 2020*
- Casual Academic, The University of Melbourne *Melbourne, Australia*  
Tutor for courses including Machine Learning, Knowledge Technologies and Social Computing. *Jul 2018 - Jun 2020*
- Manager - Usability Lab, Interaction Design Lab, The University of Melbourne *Melbourne, Australia*  
Supported a wide range of HCI research projects that involve technologies such as eye-tracking and sensing. Provided teaching support for courses including Usability Engineering. *Jun 2018 - Jan 2020*
- Software Engineer, Sysco Labs (A Sysco Company) *Colombo, Sri Lanka*  
Part of the data and analytics team managing a real-time ETL solution and a data warehouse. Principal engineer of customer profiling project that generates customer insights for over 2000 restaurants. *Apr 2016 - Feb 2018*
- Visiting Instructor, Dept. of Computer Science and Engineering, University of Moratuwa *Moratuwa, Sri Lanka*  
For Database Systems and Presentation Skills. *Apr 2015 - Feb 2016*
- Google Summer of Code Intern, WSO2 *Colombo, Sri Lanka*  
Integrated a data cleaning tool to WSO2 Machine Learner using data transformations in Apache Spark. *May 2015 - Sep 2015*
- Software Engineering Intern, WSO2 *Colombo, Sri Lanka*  
Built an R extension for WSO2 Machine Learner to generate and run machine learning algorithms in R. *Oct 2014 - Apr 2015*

## Peer-reviewed Publications

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### Journal Articles

- Sarsenbayeva, Z., van Berkel, N., **Hettiachchi, D.**, Tag, B., Velloso, E., Goncalves, J., & Kostakos, V. (2023). Mapping 20 years of accessibility research in HCI: A co-word analysis. *International Journal of Human-Computer Studies (IJHCS)*, 103018. [Q1]
- Hettiachchi, D.**, Kostakos, V., & Goncalves, J. (2022). A Survey on Task Assignment in Crowdsourcing. *ACM Computing Surveys*, 55(3), 1-35. [Q1]
- Hettiachchi, D.**, Schaekermann, M., McKinney, T., & Lease, M. (2021). The Challenge of Variable Effort Crowdsourcing and How Visible Gold Can Help. *Proceedings of the ACM on Human-Computer Interaction*, 5(**CSCW**), 332:1-332-26. [Q1]

**Hettiachchi, D.**, Hayes, L., Goncalves, J., & Kostakos, V. (2021). Team Dynamics in Hospital Workflows: An Exploratory Study of a Smartphone Task Manager. *JMIR Medical Informatics*, 9(8), e28245. [Q2]

Paananen, V., Oppenlaender, J., Goncalves, J., **Hettiachchi, D.**, Hosio, S. (2021). Investigating Human Scale Spatial Experience. *Proceedings of the ACM on Human-Computer Interaction*, 5 (ISS), 496:1-496:18. [Q1]

**Hettiachchi, D.**, van Berkel, N., Kostakos, V., & Goncalves, J. (2020). CrowdCog: A Cognitive Skill based System for Heterogeneous Task Assignment and Recommendation in Crowdsourcing. *Proceedings of the ACM on Human-Computer Interaction*, 4(CSCW), 110:1-110:21. [Q1]

Wijenayake, S., **Hettiachchi, D.**, Hosio, S., Kostakos, V., & Goncalves, J. (2020). Effect of Conformity on Perceived Trustworthiness of News in Social Media. *IEEE Internet Computing*, 25(1), 12-19. [Q1]

van Berkel, N., Goncalves, J., **Hettiachchi, D.**, Wijenayake, S., Kelly, R. M., & Kostakos, V. (2019). Crowdsourcing Perceptions of Fair Predictors for Machine Learning: A Recidivism Case Study. *Proceedings of the ACM on Human-Computer Interaction*, 3(CSCW), 28:1-28:21. [Q1]

Sarsenbayeva, Z., van Berkel, N., **Hettiachchi, D.**, Jiang, W., Dingler, T., Velloso, E., Kostakos, V., & Goncalves, J. (2019). Measuring the Effects of Stress on Mobile Interaction. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 3(1), 24:1-24:18. [Q2]

## Conference Papers

Wijenayake, S., **Hettiachchi, D.**, & Goncalves, J. (2023). Combining Worker Factors for Heterogeneous Crowd Task Assignment. In *Proceedings of the 2023 ACM Web Conference (WWW'23)*, to appear.

Kegalle, H., **Hettiachchi, D.**, Chan, J., Salim, F., & Sanderson, M. (2023). Are Footpaths Encroached by Shared e-Scooters? Spatio-temporal Analysis of Micro-mobility Services. In *Proceedings of the 24th IEEE International Conference on Mobile Data Management (MDM'23)*, to appear.

Ji, K., Spina, D., **Hettiachchi, D.**, Salim, F., & Scholer, F. (2023). Examining the Impact of Uncontrolled Variables on Physiological Signals in User Studies for Information Processing Activities. In *Proceedings of the 46th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR'23)*, to appear.

Seneviratne, S., Kasthuriarachchi, N., Rasnayaka, S., **Hettiachchi, D.**, & Shariffdeen R. (2022). Does a Face Mask Protect my Privacy?: Deep Learning to Predict Protected Attributes from Masked Face Images. In *Australasian Joint Conference on Artificial Intelligence (AJCAI'22)* (pp. 91-102). Springer, Cham.

**Hettiachchi, D.**, Arora, T., & Goncalves, J. (2021). Us vs. Them - Understanding the Impact of Homophily in Political Discussions on Twitter. In *IFIP Conference on Human-Computer Interaction (Interact'21)* (pp. 476-497). Springer, Cham.

**Hettiachchi, D.**, Sarsenbayeva, Z., Allison, F., van Berkel, N., Dingler, T., Marini, G., Kostakos, V., & Goncalves, J. (2020). "Hi! I am the Crowd Tasker" Crowdsourcing through Digital Voice Assistants. In *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems 2020 (CHI'20)* (pp. 1-14). ACM.

**Hettiachchi, D.**, Wijenayake, S., Hosio, S., Kostakos, V., & Goncalves, J. (2020). How Context Influences Cross-Device Task Acceptance in Crowd Work. In *Proceedings of the AAAI Conference on Human Computation and Crowdsourcing (HCOMP'20)* (Vol. 8, No. 1, pp. 53-62). AAAI.

**Hettiachchi, D.**, van Berkel, N., Hosio, S., López, M. B., Kostakos, V., & Goncalves, J. (2020). Augmenting Automated Kinship Verification with Targeted Human Input. In *PACIS* (p. 141).

**Hettiachchi, D.**, van Berkel, N., Hosio, S., Kostakos, V., & Goncalves, J. (2019). Effect of Cognitive Abilities on Crowdsourcing Task Performance. In *IFIP Conference on Human-Computer Interaction (Interact'19)* (pp. 442-464). Springer, Cham.

Sarsenbayeva, Z., van Berkel, N., Jiang, W., **Hettiachchi, D.**, Kostakos, V., & Goncalves, J. (2019). In *IFIP Conference on Human-Computer Interaction (Interact'19)* (pp. 465-475). Springer, Cham.

**Hettiachchi, D.**, & Goncalves, J. (2019). Towards Effective Crowd-Powered Online Content Moderation. In *Proceedings of the 31st Australian Conference on Computer-Human Interaction (OzCHI'19)* (pp. 342-346). ACM.

## Workshops and Workshop Papers

Small, E., Yueqing, X., **Hettiachchi, D.**, & Sokol, K. (2023). Helpful, Misleading or Confusing: How Humans Perceive Fundamental Building Blocks of Artificial Intelligence Explanations. In *Proceedings of ACM CHI'23 Workshop on Human-Centered Explainable AI (HCXAI)*.

Alorwu, A., Savage, S., van Berkel, N., Ustalov, D., Druitsa, A., Oppenlaender, J., Bates, O., **Hettiachchi, D.**, Gadiraju, U., Goncalves, J., Hosio, S. (2022). Reimagining Global Crowdsourcing for Better Human-AI Collaboration. In *Adjunct Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI'22 EA)*. ACM.

**Hettiachchi, D.**, Sanderson, M., Goncalves, J., Hosio, S., Kazai, G., Lease, M., Schaekermann, M., & Yilmaz, E. (2021). Investigating and Mitigating Biases in Crowdsourced Data. *Companion Publication of the 2021 Conference on Computer Supported Cooperative Work and Social Computing (CSCW '21 Companion)*. ACM.

**Hettiachchi, D.**, van Berkel, N., Dingler, T., Allison, F., Kostakos, V., & Goncalves, J. (2019). Enabling Creative Crowd Work through Smart Speakers. In *Proceedings of CHI'19 Workshop on Designing Crowd-powered Creativity Support Systems*.

## Presentations and Invited Talks

- Invited Speaker - Leveraging Worker Characteristics to Mitigate Biases and Improve Data Quality in Crowdsourcing, School of Information, University of Texas at Austin, 2023, Austin, Texas, US.
- Combining Worker Factors for Heterogeneous Crowd Task Assignment, ACM Web Conference 2023, Austin, Texas, US.
- Invited Speaker - User Perception on Multi-party Fair Recommendation, Data and Research Seminar, 2022, Deezer, Paris, France (Virtual).
- Panel Speaker - Algorithmic Culture & Recommender Systems in News & Media, ADM+S Symposium, 2022, Melbourne, Australia.
- The Challenge of Variable Effort Crowdsourcing & How Visible Gold Can Help, ACM CSCW 2021 (Virtual).
- Investigating Biases in Crowdsourced Hate Speech Annotation, BHCC 2021, Delft, Netherlands (Virtual).
- Invited Speaker - The Challenge of Variable Effort Crowdsourcing & How Visible Gold Can Help, Science Tech Presentations - Amazon, Seattle, US, 2021 (Virtual).
- Task Assignment using Worker Cognitive Ability and Context to Improve Data Quality in Crowdsourcing, PhD Completion Seminar, The University of Melbourne, Australia, 2020 (Virtual).
- How Context Influences Cross-Device Task Acceptance in Crowd Work, AAAI HCOMP 2020, Hilversum, Netherlands (Virtual).
- A Cognitive Skill based System for Heterogeneous Task Assignment and Recommendation, ACM CSCW 2020 (Virtual).
- Hi! I am the Crowd Tasker, CHI Down Under 2020 (Virtual).
- Effect of Cognitive Abilities on Crowdsourcing Task Performance, Interact 2019, Paphos, Cyprus.
- Enabling Creative Crowd Work through Smart Speakers, CHI 2019 Workshop, Glasgow, UK.
- Towards Effective Crowd-Powered Online Content Moderation, OzCHI 2019, Perth, Australia.
- Improving Crowdsourced Data Quality through Effective Task Routing, PhD Confirmation Seminar, 2019, Melbourne, Australia.

## Supervision & Teaching

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### Supervision - PhD

- Kaixin Ji (2022 - ongoing, co-supervisor), RMIT University.
- Hmdh Alknjr (2022 - ongoing, co-supervisor), RMIT University.
- Hiruni Kegalle (2021 - ongoing, co-supervisor), RMIT University.

### Supervision - MSc/MIT/BSc Thesis

- Kanika Mehra (BSc Hons, 2022, co-supervisor), RMIT University.
- Tanay Arora (MIT, 2020, co-supervisor), Dongdong Yu (MIT, 2020, co-supervisor), Leonardus Elbert Putra (MIT, 2019, co-supervisor), Yue Wang (MIT, 2019, co-supervisor), Yangyang HE (MSc, 2019, co-supervisor), Kening Wu (MIT, 2018, co-supervisor), The University of Melbourne.

### Teaching - Lecturer

- COSC 2628 - User Centred Design, RMIT University, 2023
- COSC 1182/1183 - Usability Engineering (Graduate and Undergraduate Courses), RMIT University, 2022

### Teaching - Tutor and other roles

- COSC 2669 - Case Studies in Data Science (Graduate Course), Tutor, RMIT University, 2021
- COMP 30027 - Machine Learning, Tutor, University of Melbourne, 2020
- INFO 90007 - Social Computing (Graduate Course), Tutor, University of Melbourne, 2019
- COMP 90049 - Knowledge Technologies (Graduate Course), Tutor, University of Melbourne, 2019
- INFO 90004 - Evaluating the User Experience (Graduate Course), Teaching Support, University of Melbourne, 2019
- INFO 30004 - Usability Engineering, Teaching Support, University of Melbourne, 2019
- INFO 20004 - Usability Evaluation Methods, Teaching Support, 2018-2019
- INFO 10003 - Fundamentals of Interaction Design, Tutor, University of Melbourne, 2018
- CS 3042 - Database Systems, Visiting Instructor, University of Moratuwa, Sri Lanka, 2015
- CS 2963 - Presentation Skills, Visiting Instructor, University of Moratuwa, Sri Lanka, 2015

### Training

- Melbourne Teaching Certificate, Melbourne Centre for the Study of Higher Education, The University of Melbourne, 2019
- Teaching and Assessing Communications Skills Workshops, Melbourne School of Engineering, 2019

## Grants, Scholarships & Awards

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### Grants and Scholarships

- Early Career Researcher Seed Funding, D. Hettiachchi (Lead Investigator), I. Holcombe-James, A. de Silva & F. Salim, ARC Centre of Excellence for Automated Decision-Making and Society (ADM+S) (10,000 AUD), 2021
- RMIT Capital Equipment Bid to set up a new Usability Lab at School of Computing Technologies, F. Salim, D. McKay, F. Scholer, E. Naghizade, D. Hettiachchi, M. Saiedur Rahaman, L. Cavedon & F. Zambetta, RMIT University (~ 100,000 AUD), 2021
- Google Travel Scholarship, School of Computing and Information Systems, The University of Melbourne (2,500 AUD), 2019
- Melbourne School of Engineering and School of Computing and Information Systems Conference Travel Scholarship, The University of Melbourne (3,500 AUD), 2019
- Melbourne Research Scholarship, The University of Melbourne (~ 135,000 AUD), 2018 – 2021
- Mahapola Higher Education (Merit) Scholarship for Undergraduate Studies, University Grants Commission, Sri Lanka (200,000 LKR), 2011

### Awards

- Best Poster Award, ADM+S Symposium on Automated Societies, 2022
- Best Paper, 6th Annual Doctoral Colloquium, School of Computing and Information Systems, The University of Melbourne, 2018
- Intrapreneur Award, Sysco Labs, 2017
- Runners up, Hall of Fame for Engineering Excellence, Sysco Labs, 2016
- Dean's List for Academic Excellence, Semester 1,7 and 8, Faculty of Engineering, University of Moratuwa, Sri Lanka, 2016
- Inclusive Student Leader, Unilever Youth Forum, Sri Lanka, 2015

### Competitions

- Runners Up, Spirallation Hackathon, World Conference on Youth, 2014
- 52nd globally, IEEEExtreme 7.0 programming competition, 2013
- 57th globally, Bitwise 2013 programming competition, 2013
- 93rd globally, IEEEExtreme 6.0 programming competition, 2012

## Academic Services & Leadership

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### Programme Committee Member

- Associate Chair, ACM Conference on Human Factors in Computing Systems (CHI) - 2022, 2023, 2024
- ACM International Conference on Web Search and Data Mining (WSDM) - 2022, 2023
- The ACM Web Conference (WWW) - 2022, 2023
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (SIGKDD) - 2022, 2023 - Applied Science Track
- ACM International Conference on Information and Knowledge Management (CIKM) - 2021 (Short papers), 2022, 2023
- 4th International Workshop on Algorithmic Bias in Search and Recommendation (BIAS) - 2023
- 25th Australasian Document Computing Symposium (ADCS) - 2021
- 3rd Symposium on Biases in Human Computation and Crowdsourcing (BHCC) - 2021
- AAAI Conference on Human Computation and Crowdsourcing (HCOMP) - 2020
- Australian Conference on Human-Computer-Interaction (OzCHI) - 2019

### Organizing and Technical Programme Committee

- Website Co-chair, AAAI Conference on Human Computation and Crowdsourcing (HCOMP) - 2022
- Sponsorship Chair, 4th Symposium on Biases in Human Computation and Crowdsourcing (BHCC) - 2022
- Organiser, ACM CHI Workshop - Reimagining Global Crowdsourcing for Better Human-AI Collaboration - 2022
- Organiser, ACM CSCW Workshop - Investigating and Mitigating Biases in Crowdsourced Data - 2021
- Logistics Chair, Australian Conference on Human-Computer-Interaction (OzCHI) - 2020
- Data Chair, ACM Conference on Human Factors in Computing Systems (CHI) - 2019
- Student Volunteer Chair, CHI DownUnder - 2020
- Student Volunteer, CHI - 2019 and OzCHI - 2018
- Student Volunteer, Australian Conference on Human-Computer-Interaction (OzCHI) - 2018

## Conference and Journal Reviewing

- ACM Conference on Human Factors in Computing Systems (CHI) - 2020, 2021
- ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW) - 2018, 2019, 2020, 2021, 2022, 2023
- ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) - 2019, 2020, 2021
- AAAI Conference on Human Computation and Crowdsourcing (HCOMP) - 2020
- The Web Conference (WWW) - 2019
- IFIP TC.13 International Conference on Human-Computer Interaction (INTERACT) - 2019, 2021
- ACM International Conference on Information and Knowledge Management (CIKM) - 2021
- AAAI Conference on Web and Social Media (ICWSM) - 2020
- Pervasive and Mobile Computing Journal (PMC) - 2020, 2021
- Information Processing & Management (IPM) - 2022
- ACM Transactions on Information Systems (TOIS) - 2022, 2023
- JCSCW: The Journal of Collaborative Computing and Work Practices - 2022
- Australian Conference on Human-Computer-Interaction (OzCHI) - 2019, 2020

## Other Leadership Roles

- Coordinator, ADM+S Tech Talks Seminar Series, 2021-22
- Committee Member 2018/19, School of Computing and Information Systems Graduate Researchers Association (CIS-GReS), The University of Melbourne.
- Vice President Public Relations 2017/18 & Sergeant at Arms 2016/17, Sysco Labs SL Toastmasters Club, Toastmasters.
- Vice President Business Development 2015/16 & Local Committee President 2014/15, AIESEC in Sri Lanka.
- President - Student Chapter 2015/16, Old Royalists Engineering Professionals Association (OREPA).