



Stefania Druga

Hi! I am Stef. I am a fourth-year Ph.D. Candidate at the University of Washington Information School advised by Prof. [Amy J. Ko](#) in the [Code & Cognition Lab](#).

My research focuses on **Computer-Supported Coding** and the design of **Creative AI tools**. I also enjoy designing and building future smart toys and games. When I am not coding & writing papers I love hiking. climbing.

I am a former an AI Resident at [X Moonshot Factory](#), a [Weizenbaum Research Fellow](#). An awardee of the [NSF Formal Veri cation in the Field Grant](#) and the [Jacobs Foundation Grant](#). I was previously a [LEGO Papert Fellow](#) during my time as a master student at MIT researching with Prof. Mitch Resnick and the [Scratch](#) team.

For more information, please [reach out to me](#)! Or have a look at my [projects](#), [papers](#), or [resume](#).

selected publications

CHI 2022

Family as a Third Space for AI Literacies: How do children and parents learn about AI together?
[Drug](#), [Stefania](#), Christoph, Fee, and Ko, Amy J.
CHI '22: ACM Conference on Computer-Human Interaction 2022

PDF

IJCCI 2022

Examining voice assistants in the context of children’s speech
Kim, Min Kyong, [Drug](#), [Stefania](#), Esmaeili, Shaghayegh, Woodward, Julia, Shaw, Alex, Jain, Ayushi, Langham, Jaida, Hollingshead, Kristy, Lovato, Silvia B, Beneteau, Erin, and others,
International Journal of Child-Computer Interaction 2022

PDF

MAKE 2023

Creative AI Book: Making and Tinkering with Artificial Intelligence
Stefania, Druga
2023

HTML



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Resume

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Qualifications summary

- Program synthesis for computer-supported coding.
- Large language models for code generation.
- Research on Creative AI applications.
- Extensive experience in building programming platforms for children.
- Teaching classes about creative learning and prototyping with AI.

Awards

- [NSF FMitF Grant](#) for End-User Programming project, 2021
- [Jacobs Foundation Grant](#) for AI Literacy project, 2020
- [Weizenbaum Research Fellow](#) in Criticality of AI-based Systems Lab in Berlin, 2019
- [Google Fellow](#), Google & NYU ITP, 2019.
- [LEGO Papert Fellow](#), MIT MediaLab, 2018
- [Finalist of Ideas for Europe competition](#), EU, 2017
- [Women to Watch in Science](#), Women at the frontier, 2016

Research Experience

- AI Research Resident, X Moonshot Factory (March 2022 – October 2022)
 - Build future developer tools with AI.
 - <https://x.company/>
- Summer Intern, Microsoft Research (June 2020 – Sep. 2020)
 - Conducted an longitudinal study with 17 families for 5 weeks evaluating a new programming platform for kids.
 - Analyzed and communicated findings in company wide presentations and public webinars
 - <https://www.microsoft.com/en-us/research/project/microsoft-tilecode/>
- Research Associate, CRI (Mar. 2011 – Jan. 2012)
 - Participated as a research associate in a project that applied machine learning algorithms for interdisciplinary online educational programs.
 - The proposal was validated by an international committee of researchers and involved collaborating with an international team of data scientists
 - <https://criparis.org/>
- ICT Researcher, Open University UNIT (Jan 2009 – May. 2009)
 - Conducted a study for the French Ministry of Education on the use of digital resources in 20 universities and engineering schools.
 - The study was published by UNIT and is now an industry standard guide in the participating universities.
 - <http://www.unit.eu/>

Active Projects

- [Cognimates](#) : Live at cognimates.me
 - AI education platform for children to train their own machine learning models.
 - Users can also code smart games using their custom models.
- [AI Literacy Playground](#) : Live at <http://aiplayground.me/>
 - Playground for AI explainability allowing users to classify custom datasets.
 - Users may also identify anchors in images to support algorithms interpretability.
- [TileCode](#) : Live at <https://microsoft.github.io/tilecode/>
 - TileCode is an app for designing, coding, and playing video games directly on low-cost arcade gaming handhelds.
 - Our starting point are retro video games to be created via a set of visual rules.

Education

Degree	Major	Institution	Graduation Year	GPA
Ph.D Information School	Informatics	University of Washington	2023	3.9/4
Master of Science	Media Arts and Science	Massachusetts Institute of Technology	2018	5/5
Master of Science	Instructional Design,	Technical University of Lisbon, Poitiers University, UNED Madrid	2008	5/5
Bachelor of Communication	Public Relations & Communication	Polytechnic University of Timisoara	2005	5/5

Professional Experience

- Creative AI Track Lead, MIT MediaLab Berlin, Berlin, Germany (Jun. 2018 – Jul. 2018)
 - Designed and ran the machine learning for creative AI track, selected 10 participants from 300 applications.
 - Organized a series of lectures, talks, and sitevisits to partner organizations.
 - Mentored students on their projects, documented and published final results.
 - <http://berlin.media.mit.edu>
- Co-founder, HackIDemia, Global (Jan. 2012 – Nov. 2020)
 - Overseeing HackIDemia, a global organization for children STEM education.
 - We are designing a 21st century curriculum by using latest technologies and scientific inventions.
 - We trained local teams i n 40 countries with 600 mentors and 10.000 children involved to date.
 - <https://hackidemia.com>
- Computer Science Lead Teacher, Girls Who Code, U.S.A (Jun. 2016 – Sep. 2016)
 - Taught computer science to a group of 30 senior highschool students for 3 months as part of the Girls Who Code Program
 - Managed two teaching assistants and created curriculum for the hardware and robotics modules.
 - <https://girlswhocode.com/>
- R&D Specialist, Samsung research, U.S.A (Jan. 2016 – Jun. 2016)
 - Proposed new IoT communication protocols for low powered WiFi sensors.
 - Implemented a series of prototypes for detecting water leaks at scale by measuring pipes vibration.
 - This lead to a commercial product (Lotik) which is still being developed by Samsung.
 - <https://samsungnext.com/>
- Director, Maker Camp, China, Germany (Jan. 2014 – Jan. 2016)
 - Initiated the first maker camp in Berlin and Shenzhen with 15 global participants.
 - We used only upcycled materials and tools to build the first makerspace in a shipping container in Europe and China.
 - Each camp ran for one month, had 10 tracks, 20 mentors. oposed new IoT communication protocols for low powered WiFi sensors.
 - <https://makercampberlin.tumblr.com>
- Founder, Afrimakers, Africa (Jan. 2014 – Jan. 2016)
 - Created Afrimakers in partnership with 8 African techhubs in Egypt, Kenya, Tanzania, Rwanda, Zambia, Botswana, Ghana, Nigeria.
 - This initiative enables local makers to use digital fabrication for solving local challenges like access to clean water, energy, education.
 - <https://afrimakers.org>
- Education Advisor, Singularity University, U.S.A (Apr. 2012 – Sept. 2012)
 - Curated the education track for 80 students from 36 countries and conducted a series of prototyping workshops.
 - Initiated coaching sessions and sitevisits to pioneering edtech organizations like Khan Academy, Udacity, Gooru.
 - <https://singularityu.org>
- Volunteer Teacher, Catholic University of Peru, Cambodia (Jan. 2012 – Apr. 2012)
 - As part of a voluntary mission I was teaching 100 children how to use computers and new technologies.
 - Within 2 months I have acquired 3000 € in donations and created a computer lab for the children.
 - You can find out more here: teachingcambodia.blogspot.com.
 - <https://kkevcbodia.org>
- SQE Associate, Google, Ireland (Sept. 2010 – Jun. 2011)
 - Helped defend Google’s index against webspam and collected data for search algorithm design.
 - Worked with the internal education team to improve the new hires training.
 - <https://google.com>
- ToT Trainer, Catholic University of Peru, Peru (Jan. 2008 – Apr. 2008)
 - Instructed 40 Peruvian primary school teachers in the use of information and communication technology.
 - Conducted a final evaluation which showed that 80% of the teachers were using the new tools.
 - <http://www.pucp.edu.pe>

Graduate Courses Taken

- [Computer-Aided Reasoning for Software](#)
- [Machine Learning Fairness](#)
- [Data Management and Data Science](#)
- [Prototyping Interactive Devices with AI](#)
- [How to make almost anything](#)
- [Design Internet Research](#)
- [Culture Learning and Development](#)
- [Computer-Supported Collaborative Learning](#)
- [Child-Computer Interaction](#)

Teaching Experience

- [Designing Smart Toys at RISD](#)
- [Hacking Smart Toys at ITP NYU](#)
- [INFO 350 Information Ethics and Policy](#)
- [INFO 330 Research Methods](#)

Service

- Chair for [IDC 2022 Conference](#)
- Chair for [IDC 2021 Conference](#)
- Student Volunteer for [ICER 2021](#)
- Reviewer for CHI, IDC, CSCW, Fablearn conferences from 2018-Present
- Research Committee Representative for [UW iSchool](#) student organization
- Volunteer with [iSchool Diversity Initiative](#) supporting BIPOC graduate applicants
- Chair of the [UW Computer Science Care Committee](#)
- Education Board member for Unesco MGIEP
- AI Education Committee member for [Technovation](#), organisation for international AI Education for families
- Board member for [AIDA](#), organisation using AI for social development

Talks

- Speaker at the US Chamber of Congress AI Commission on [Future Governance for Family AI Use and Literacy](#) (9 May 2022)
- Webinar on [Creativity in Data Science and Machine Learning](#) moderated by Comet ML (29 April 2022)
- Speaker on Talking Robotics Seminar on [Creative coding with AI Friends for Youth](#)(3 April 2022)
- Speaker a Computing Education Research Seminars [Democratizing AI education with and for families](#) with Raspberry Pi Foundation (1 Mar 2022)
- Speaker at mSchools EdChange [Machines & Humans Educational Perspectives](#) at the GSMA Mobile World Congress (2021)
- Webinar for teachers in Chile [La Democratización de la Inteligencia Artificial para los Niños](#) with Chilean British Institute (2021)
- Seminar on AI Education research [Why Teach and Learn AI?](#) for National Department of Education in France (2021)
- Webinar on [development of new coding platforms for children](#) with Microsoft Research (2020)
- Panel on future of [AI education with Unesco](#) (2020)
- Speaker at [Future of childhood Summit](#) with Google and Sesame Workshop (2020)
- Speaker at [Applied Machine Learning Days](#), EPFL (2020)
- Keynote at [Digital Summit for Teachers](#) organized by Korber Foundation (2019)
- Speaker at Teachers Colledge [AI Education Conference](#)(2019)
- Keynote at [Pydata Conference](#)(2019)
- Keynote at [Libre Learn Lab Conference](#)(2018)
- Guest [Cognimates tutorial on the Coding Train](#)(2018)

Press

- [DW TV Documentary: How artificial intelligence is changing our society](#) from DW German Public Broadcast (2020)
- [UW researchers receive grant to explore childhood AI literacy](#) for UW Daily (2020)
- [How is AI upgrading playtime?](#) for Canvas8 (2020)
- [The Hard Fun of Designing Alternatives to Smart Toys](#) for Processing Foundation (2019)
- [Where does AI fit in the classroom?](#) for Teachers College Newsroom (2019)

- [Will AI really transform education?](#) for Hechinger Report (2019)
- [How children understand artificial intelligence](#) for Teller Report (2019)
- [Artificial intelligence has to be demystified](#) for Spiegel (2019)
- [Spotlight: Let's ask more of AI](#) for Mozilla's Internet Report(2019)
- [Should Children Form Emotional Bonds With Robots?](#), The Atlantic (2017)
- [Growing Up with Alexa](#) MIT Technology Review (2017)
- [Understanding Generation Alpha](#) for Wired (2017)

Podcasts

- TechnoGypsy: [Computer-supported programming & AI Education](#)(2022)
- Humanitarian AI: [AI literacy for families](#)(2021)
- Prof Talks: [AI Education & Smart Toy Design](#)(2020)
- Ed Tech: [Digging into Digital Skills Development](#)(2019)
- Meaningful Making: [What is AI](#)(2019)
- Airtalk: [They're alive! Are smart toys changing how children interact with humans?](#)(2017)
- CBC Radio: [Would you let your kids play with AI robots?](#)(2017)

Skills

- **Research:** [AI Education](#) * [Large Language Models](#) * [Program Synthesis](#) * [Interaction Design](#)
- **R&D:** [CAD design](#) * [Embedded programming](#) * [Digital fabrication](#)
- **Instructional Design:** [STEAM curriculum](#) * [Teacher training](#) * [Project-based teaching](#)
- **Programming Languages:** [R](#) * [Ruby](#) * [Python](#) * [Javascript](#) * [HTML](#)
- **Web Frameworks:** [React](#) * [Rails](#) * [Bootstrap](#)
- **Databases:** [MySQL](#) * [PostgreSQL](#)
- **Languages:** [Romanian](#) * [English](#) * [French](#) * [Spanish](#) * [Italian](#) * [Portuguese](#)

Passions

- Hosting a [radio show](#)
- Climbing and hiking [trips](#)
- Reading science fiction [books](#)

Publications

MAKE 2023	<div>Creative AI Book: Making and Tinkering with Artificial Intelligence</div> <div>Stefania, Druga</div> <div>2023</div> <div>HTML</div>	2023
CHI 2023	<div>A Word is Worth a Thousand Pictures: Prompts as AI Design Material</div> <div>Kulkarni, Chinmay, <u>Druga, Stefania</u>, Chang, Minsuk, Fiannaca, Alex, Cai, Carrie, and Terry, Michael</div> <div>CHI '23: ACM Conference on Computer-Human Interaction 2023</div>	
CHI 2023	<div>The Prompt Artists</div> <div>Chang, Minsuk, <u>Druga, Stefania</u>, Cai, Carrie, Fiannaca, Alex, Kulkarni, Chinmay, and Terry, Michael</div> <div>CHI '23: ACM Conference on Computer-Human Interaction 2023</div>	
MIT PRESS 2022	<div>The 4As: Ask, Adapt, Author, Analyze: AI Literacy Framework for Families</div> <div>Stefania, Druga, Jason, Yip, Michael, Preston, and Devin, Dillon</div> <div>2022</div> <div>PDF</div>	2022
CHI 2022	<div>Family as a Third Space for AI Literacies: How do children and parents learn about AI together?</div> <div><u>Druga, Stefania</u>, Christoph, Fee, and Ko, Amy J.</div> <div>CHI '22: ACM Conference on Computer-Human Interaction 2022</div> <div>PDF</div>	
IDC 2022	<div>How families design and program games: a qualitative analysis of a 4-week online in-home study</div> <div><u>Druga, Stefania</u>, Ball, Thomas, and Ko, Amy J.</div> <div>IDC '22: ACM Conference on Interaction Design and Children 2022</div> <div>PDF</div>	
ITICSE 2022	<div>The Landscape of Teaching Resources for AI Education</div> <div><u>Druga, Stefania</u>, Otero, Nancy, and Ko, Amy J.</div> <div>ITICSE '22: ACM conference on Innovation and Technology in Computer Science Education 2022</div> <div>PDF</div>	
IJCCI 2022	<div>Examining voice assistants in the context of children's speech</div> <div>Kim, Min Kyong, <u>Druga, Stefania</u>, Esmaeili, Shaghayegh, Woodward, Julia, Shaw, Alex, Jain, Ayushi, Langham, Jaida, Hollingshead, Kristy, Lovato, Silvia B, Beneteau, Erin, and others,</div> <div>International Journal of Child-Computer Interaction 2022</div> <div>PDF</div>	
UW 2022	<div>Interest-Driven Creative Programming for Youth with AI Friends</div> <div>Stefania, Druga</div> <div>2022</div> <div>PDF</div>	

IDC 2021

How do children’s perceptions of machine intelligence change when training and coding smart programs?

Druga, Stefania, and Ko, Amy J.

Interaction Design for Children ACM 2021

PDF

CLS 2021

Imagining Future Designs of Tools for Youth Data Literacies

Cheng, Regina, Druga, Stefania, Gan, Emilia, D’Ignazio, Catherine, Bhargava, Rahul, Lee, Victor, Matuk, Camillia, Clegg, Tamara, Rubin, Andee, and Kafai, Yasmin

Connected Learning Summit 2021

PDF

KDD 2021

A Design Framework for Citizen-Science AI Platforms for Families

He*, Fangqing, Wang*, Yifeng, and Druga, Stefania

Fragile Earth Workshop at ACM’s KDD Virtual 2021 Conference 2021

PDF

JoDS 2020

The 4As: Ask, Adapt, Author, Analyze AI Literacy Framework for Families

Stefania, Druga, Jason, Yip, Michael, Preston, and Devin, Dillon

Journal of Design and Science 2020

PDF

IDC 2020

Research Toolkit for Future-Oriented Play with Families

Druga Stefania, Michelson Rebecca

Researchers’ Toolbox for the Future Workshop 2020

PDF

IDC 2020

”Puffy and Sticking Out” CollaborativeImage Classification with Kids

Tian Yubing, Druga Stefania

Creating Opportunities for Children’s Reflections on Artificial Intelligence, Robotics and other Intelligent Technologies 2020

PDF

CACM 2020

It Is Time for More Critical CS Education

Ko, Amy J., Oleson, Alannah, Ryan, Neil, Register, Yim, Xie, Benjamin, Tari, Mina, Davidson, Matthew, Druga, Stefania, and Loksa, Dastyni

Communications of the ACM 2020

HTMLPDF

FABLEARN 2019

Inclusive AI literacy for kids around the world

Stefania, Druga, T, Vu Sarah, Eesh, Likhith, and Tammy, Qiu

2019

HTMLPDF

CHIPLAY 2019

Ballbit Adventure: A Physical Game for a Collaborative Racing

Quincy, Kuang, Jiaxin, Zhang, and Stefania, Druga

In Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts 2019

HTMLPDF

CHIPLAY 2019

The Humming Box: AI-powered Tangible Music Toy for Children

Chunhan, Chen, Yihan, Tang, Tianyi, Xie, and Stefania, Druga

In Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts 2019

HTMLPDF

CHIPLAY 2019

Legoons: Inflatable Construction Kit for Children

Xuefei, Yang, and Stefania, Druga

In Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts 2019

HTML

PDF

IDC 2018

How smart are the smart toys? children and parents’ agent interaction and intelligence attribution

Stefania, Druga, Randi, Williams, Won, Park Hae, and Cynthia, Breazeal

In Proceedings of the 17th ACM Conference on Interaction Design and Children 2018

HTML

PDF

IDC 2018

" My doll says it’s ok" a study of children’s conformity to a talking doll

Randi, Williams, Vázquez, Machado Christian, Stefania, Druga, Cynthia, Breazeal, and Pattie, Maes

In Proceedings of the 17th ACM Conference on Interaction Design and Children 2018

HTML

PDF

MIT 2018

Growing up with AI: Cognimates: from coding to teaching machines

Stefania, Druga

2018

HTML

PDF

MIT 2018

Cognimates

Stefania, Druga, Sarah, Vu, Eesh, Likhith, and Tammy, Qui

2018

HTML

2018

CHI 2017

Embodied learning and play in sensorimotor augmentations for kids

Stefania, Druga

2017

HTML

PDF

IDC 2017

" Hey Google is it OK if I eat you?" Initial Explorations in Child-Agent Interaction

Stefania, Druga, Randi, Williams, Cynthia, Breazeal, and Mitchel, Resnick

In Proceedings of the 2017 Conference on Interaction Design and Children 2017

HTML

PDF

ISWC 2018

Motif: a wearable sonic cueing device for memory support and cognitive intervention

Stefania, Druga, Pattie, Maes, and Alexandra, Rieger

In Proceedings of the 2017 ACM International Symposium on Wearable Computers 2017

HTML

PDF

2017

SIGGRAPH 2014

Open Source Hardware (OSHW) Supporting Interaction between Traditional Crafts and Emergent Science: Wayang Kulit over Microfluidic Interfaces

Justyna, Ausareny, Denisa, Kera, Stefania, Druga, and Yair, Reshef

In SIGGRAPH Asia 2014 Designing Tools For Crafting Interactive Artifacts 2014

ABS

PDF

2014

EUROMIME 2010

Open Education Resources Practices and Copyrights for Teachers

Stefania, Druga

2010

PDF

2010