

# Talia Minyin Xu

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INFORMATION *Website:* <https://taliaxu.com>

EDUCATION **Delft University of Technology, Delft, the Netherlands**  
Doctor of Philosophy in Computer Science Feb. 2020 - Feb. 2024 (Expected)  
Thesis: Passive Visible Light Communication  
Advisor: [Marco Zúñiga](#)

**University of Toronto, Toronto, ON, Canada**  
Master of Applied Science in Electrical Engineering 2016 - 2018  
Thesis: [Reconfigurable Dual-band and Wide-band Spatially-fed Array Antennas](#)  
Advisor: [Sean Hum](#)

Bachelor of Applied Science in Electrical and Computer Engineering 2011 - 2016

EXPERIENCE **Ph.D. Research** Feb. 2020 - Current  
[Delft University of Technology](#), Delft, The Netherlands  

- My thesis is on enabling wireless optical communication with ambient light with reconfigurable optical surfaces.
- Designed and implemented systems to establish a point-to-point ambient light communication with different spatial optical modulators (liquid crystal shutters, digital micromirror devices) and optical receivers (photodiodes, solar cells).
- Explored the use of intelligent reflecting surfaces in LiFi systems for non-line-of-sight communication and sensing.
- Proposed research project ideas for master students and supervised them to work on topics related to localization with visible light.

**Antenna and RF Engineer** Oct. 2018 - Oct. 2019  
[Reach Power](#), Oakland, CA, The U.S.A  

- Lead the antenna design efforts for various industrial focused wireless charging applications, through the design of phased array antennas as the charging station and passive receiving antennas to maximize received power.
- Carried out end-to-end (from simulation to measurements) designs of RF circuits (rectifying circuits and phase shifters) at 5.8 GHz and 915 MHz for different power levels.
- Implemented a reliable and scalable communication link between transmitting and receiving stations on TI CC1350

**M.A.Sc Research** Sep. 2016 - Oct. 2018  
[University of Toronto](#), Toronto, ON, Canada  

- Design and verification of passive and electronically reconfigurable antennas with full-wave simulation tools such as ANSYS HFSS and near-field measurements in anechoic chamber using NSI near-field scanner.
- Designed a wide-band reconfigurable metasurface and extracted an accurate circuit model to analyze its working principle for fast implementation and scalability.
- Hands-on experience with design and layouts of multi-layer mixed RF-signal PCBs, vector network analyzer

**Software Engineer Intern** May 2016 - Aug. 2016  
[Amazon](#), Toronto, ON, Canada  

- Designed, implemented, and tested a package to evaluate and visualize performance of new employees.
- Deployed the package to auto-collect and process data from warehouses in the North America and Europe regions daily for performance evaluation of warehouse employees.

**Software Engineer Intern**

May 2015 - Aug. 2015

Arista Networks, Burnaby, BC, Canada

- Implemented a packet feature to decode incoming packets on an interface and allow users to better monitor traffic coming in and out on a switch
- Designed and wrote a model based product test to exhaust all possible configurations and test scenarios
- Assisted with product release and debugging issues

**Student Researcher**

May 2014 - Aug. 2014

University of Toronto, Toronto, ON, Canada

- Explored Xilinx High Level Synthesis tool Vivado on Zedboard and Nexys4 board, developed tutorial and lab materials for fourth year undergraduate hardware course
- Used peripheral module to control a robot arm, created a base project and documentation for fourth year undergraduate computer engineering students
- Implemented a firewall application for Virtual Extended LAN using CAM in Verilog and C, compared their performance and co-authored a paper to be submitted to FPGA conference

**Hardware Acceleration Lab Intern**

May 2013 - May 2014

IBM, Markham, ON, Canada

- Implemented, used and evaluated convolutional neural network for processing, training and testing images for object classification
- Implemented different face recognition algorithms on CPU such as PCA and Fisherface using C++ and accelerated them on GPU using cuda and achieved more than 10 times performance improvements on GPU
- Prototyped kernels for business analysis algorithms on GPU using cuda and evaluated its performance compared to multi-core CPU, gained 5X performance improvements
- Optimized TSM (written in C) by providing software optimizations such as utilizing platform-specific assembly code, performing SIMD on its operations and unrolling loops to achieve over 30
- Modified kernel drivers for FPGA (written in C) and added kernel and user functions to enable Configuration via Protocol to allow reconfiguration of FPGA without rebooting the machine

## REFEREED

## JOURNAL

## PUBLICATIONS

Miguel Chávez Tapia, **Talia Xu** and Marco Zúñiga. SunBox: Screen-to-Camera Communication with Ambient Light. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2022

Elham Baladi, **Minyin Xu**, Nicolas Faria, Jeff Nicholls and Sean Victor Hum. Dual-Band Circularly Polarized Fully Reconfigurable Reflectarray Antenna for Satellite Applications in the Ku-Band. *IEEE Transactions on Antennas and Propagation (IEEE TAP)*, 2021

## REFEREED

## CONFERENCE

## PUBLICATIONS

\* represents students I advised

Lucan de Groot\*, **Talia Xu** and Marco Zúñiga. DroneVLC: Exploiting Drones and VLC to Gather Data from Batteryless Sensors. *The 21st International Conference on Pervasive Computing and Communications (PerCom)*, 2023 (acceptance rate: 17%)

Oxana Oosterlee\*, **Talia Xu** and Marco Zúñiga. Inti: Indoor Tracking with Solar Cells. *The International Conference on Embedded Wireless Systems and Networks (EWSN)*, 2022 (acceptance rate: 30.4%)

**Talia Xu**, Miguel Chávez Tapia and Marco Zúñiga. Exploiting Digital Micro-Mirror Devices for Ambient Light Communication. *19th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, 2022 (acceptance rate: 19.7%)

## MSc THESIS

## ADVISED

Jasper-Jan Lut

Current

Jasper de Zoete

Current

	Lucan de Groot	2022
	DynamicVLBC: Battery-less Visible Light Backscatter Communication in Dynamic Conditions.	
	Ricardo Ampudia	2021
	Visible light positioning for UAV.	
	Oxana Oosterlee	2021
	Indoor Multi-Target Tracking with Solar Cells.	
TEACHING EXPERIENCE	<b>Embedded Systems Lab,</b> <i>CS4140, Delft University of Technology, 2021, 2022</i> Monitored labs and marked exams covering embedded system designs for a drone control system.	Teaching Assistant <i>(Graduate Students)</i>
	<b>Radio and Microwave Wireless Sysetms,</b> <i>ECE422, University of Toronto, 2016, 2017</i> Developed lab materials and monitored labs covering antenna experiments	Teaching Assistant <i>(4th Year Undergraduates)</i>
	<b>Computer Organization,</b> <i>CSC258, University of Toronto, 2015, 2016, 2017, 2018</i> Monitored labs and marked exams. Mentored students during 3-week design projects using Verilog to implement hardware designs.	Teaching Assistant <i>(2nd Year Undergraduates)</i>
	<b>Operating Systems,</b> <i>CSC369, University of Toronto, 2016, 2017, 2018</i> Presented tutorials, marked assignments, monitored online discussion forum and marked exams.	Teaching Assistant <i>(3rd Year Undergraduates)</i>
	<b>Computers in Linguistics,</b> <i>LINB19, University of Toronto, 2017</i> Developed lab and exam materials.	Course Developer <i>(Undergraduates)</i>
FUNDING	<b>Firefly</b> , co-PI (with Professor Marco Zúñiga), 49 k€, 2022-2023, source: NWO (XS).	