THOMAS P ZACHARIAH

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EDUCATION

University of California, Berkeley — Berkeley, CA
Ph.D. Electrical Engineering & Computer Sciences, Advisor: Prabal Dutta   **AUG 2017 – MAY 2023**

University of Michigan — Ann Arbor, MI
M.S.E. Computer Science & Engineering   **AUG 2013 – MAY 2017**

Loyola Marymount University — Los Angeles, CA
B.S.E. Computer Engineering, Minors: Applied Mathematics & Computer Science   **AUG 2009 – MAY 2013**

ENGINEERING & RESEARCH EXPERIENCE

University of California, Berkeley — Berkeley, CA
Graduate Researcher, Electrical Engineering & Computer Sciences   **AUG 2017 – AUG 2023**
- Worked with Dr. Prabal Dutta in Lab11 (Embedded Systems) in Electrical Engineering & Computer Sciences.
- Designed & implemented lightweight gateway architectures and user-interfacing methods for the Internet of Things.

University of Michigan — Ann Arbor, MI
Graduate Researcher, Computer Science & Engineering   **MAY 2014 – AUG 2017**
- Worked with Dr. Prabal Dutta in Lab11 (Embedded Systems) in Computer Science & Engineering.
- Designed & implemented mobile-based gateway architectures to enable connectivity for low-power Internet of Things.

Virginia Tech — Blacksburg, VA
NSF Researcher, Cognitive Communications REU   **JUN 2012 – AUG 2012**
- Developed data analysis software & graphical user interface to study space weather effects on GPS signals recorded from newly deployed space weather measurement instrumentation in Antarctica. Worked with Dr. Hyomin Kim.

Loyola Marymount University — Los Angeles, CA
Undergraduate Researcher, Applied Computer Engineering   **SEP 2010 – MAY 2013**
- Developed software to process & analyze climate model data to predict impacts of climate change on California's water resources in the next century. Worked with Dr. Jeremy Pal, member of 2007 Nobel Prize-winning IPCC team.
- Designed & deployed TinyOS wireless sensor networks for parking lot occupancy. Worked with Dr. Gustavo Vejarano.

Loyola Marymount University — Los Angeles, CA
El Salvador Project Leader, Engineers Without Borders   **JAN 2011 – JAN 2013**
- Co-led team of engineering students in replacing a waterline system for an island community's only school and set up measures to ensure water potability throughout the island (village-scale filtration systems & water education).
- Worked with the island's Women's Co-op to get its facilities up to federal code to make goods to sell across El Salvador.

Los Angeles, CA
Independent Web & Mobile Developer   **JAN 2005 – PRESENT**
- Working with HTML, JavaScript, PHP, CSS, and graphic design to create captive websites & web apps.
- Developing native & cross-platform (Cordova/React) apps for desktop, iOS (Objective-C/Swift), & Android (Java/Kotlin).

TEACHING & OTHER WORK EXPERIENCE

University of Michigan — Ann Arbor, MI
Graduate Instructor, EECS 270: Logic Design (F'13, W'14)   **SEP 2013 – APR 2014**
- Held office hours, lectured class, led study sessions, managed all grades, created homework assignments, hired & supervised homework graders, and wrote & graded exams. Over 300 students during the two semesters.

Loyola Marymount University — Los Angeles, CA
Teacher/Lab Assistant, ELEC 210/213/220/301/353/302/354: Circuits I/II, Electronics I/II, Labs   **SEP 2011 – MAY 2013**
- Guided students in labs, provided assistance to the professor as needed, and held office hours for respective courses.

Loyola Marymount University — Los Angeles, CA
Engineering Tutor, Tau Beta Pi   **JAN 2012 – MAY 2013**
- Offered weekly tutoring service for all engineering students in any requested material.

Loyola Marymount University — Los Angeles, CA
Event Operations Assistant   **SEP 2009 – MAY 2013**
- Collaborated with hosts and personnel to plan, set up equipment for, and conduct events held at the University.

SKILLS

- Operating Systems: Macintosh, Windows, Linux, iOS, Android, TinyOS, Contiki, FreeRTOS
- Programming: Assembly, C, C++, NesC, Objective-C, Java, Kotlin, Node.js, Python, Swift, Bash, Haskell, MATLAB
- Web Development: HTML5, JavaScript, PHP, CSS3, Flash, JQuery, Bootstrap, Apache Maven, graphics/animation, WebXR
- Embedded Engineering: Bluetooth LE, 802.15.4/Zigbee/Thread, Arduino, Raspberry Pi, Nordic nRF52, Espressif ESP32
- Electrical Engineering: B^2 Logic, Logisim, Multisim, NI Elvis & LabView, Xilinx ISE & FPGA, M68HC12, SystemVerilog
- Media: Adobe Photoshop, Illustrator, Premiere Pro, After Effects, Dreamweaver, Flash; GIMP; Inkscape; Final Cut Pro
- Productivity: Microsoft Office, Visual Studio; Google Workspace; Xcode; Android Studio; Git

PUBLICATIONS

- **Thomas Zachariah**. Application-Agnostic Connectivity and Interaction in the Internet of Things. In *EECS Dept, University of California, Berkeley*. 2023. Dissertation.
- **Thomas Zachariah**, Noah Klugman, Prabal Dutta. ThingSpeak in the Wild: Exploring 38k Visualizations of IoT Data. In *Proceedings of the Fifth International Workshop on Data Acquisition to Analysis*. DATA '22. Boston, MA, USA. November 2022. Workshop.
- **Thomas Zachariah**, Neal Jackson, Branden Ghena, Prabal Dutta. ReliaBLE: Towards Reliable Communication via Bluetooth Low Energy Advertisement Networks. In *Proceedings of the 19th International Conference on Embedded Wireless Systems and Networks*. EWSN '22. Linz, Austria. October 2022. Conference.
- **Thomas Zachariah**, Neal Jackson, Prabal Dutta. The Internet of Things Still Has a Gateway Problem. In *Proceedings of the 23rd Workshop on Mobile Computing Systems and Applications*. HotMobile '22. Tempe, AZ, USA. March 2022. Workshop.
- David E Culler, Prabal Dutta, Gabe Fierro, Joseph E Gonzalez, Nathan Pemberton, Johann Schleier-Smith, Kalyanaraman Shankari, Alvin Wan, **Thomas Zachariah**. CoVista: A Unified View on Privacy Sensitive Mobile Contact Tracing. In *IEEE Data Engineering Bulletin*, Volume 43, Number 2. June 2020. Article.
- **Thomas Zachariah**, Joshua Adkins, Prabal Dutta. Browsing the Web of Connectable Things. In *Proceedings of the 17th International Conference on Embedded Wireless Systems and Networks*. EWSN '20. Lyon, France. February 2020. Conference.
- **Thomas Zachariah**, Prabal Dutta. Browsing the Web of Things in Mobile Augmented Reality. In *Proceedings of the 20th Workshop on Mobile Computing Systems and Applications*. HotMobile '19. Santa Cruz, CA, USA. February 2019. Workshop.
- **Thomas Zachariah**, Meghan Clark, Prabal Dutta. Bluetooth Low Energy in the Wild Dataset. In *Proceedings of the First International Workshop on Data Acquisition to Analysis*. DATA '18. Shenzhen, China. November 2018. Workshop.
- **Thomas Zachariah**, Joshua Adkins, Prabal Dutta. Browsing the Web of Things with Summon. In *Proceedings of the 13th ACM Conference on Embedded Networked Sensor Systems*. SenSys '15. Seoul, South Korea. November 2015. Demo.
- Joshua Adkins, Bradford Campbell, Samuel DeBruin, Branden Ghena, Benjamin Kempke, Noah Klugman, Ye-Sheng Kuo, Deepika Natarajan, Pat Pannuto, **Thomas Zachariah**, Alan Zhen, Prabal Dutta. Michigan's IoT Toolkit. In *Proceedings of the 13th ACM Conference on Embedded Networked Sensor Systems*. SenSys '15. Seoul, South Korea. November 2015. Demo.
- Brad Campbell, Noah Klugman, **Thomas Zachariah**. HotMobile 15. In *IEEE Pervasive Computing: Mobile & Ubiquitous Systems*, Volume 14, Number 2. April 2015. Article.
- **Thomas Zachariah**, Noah Klugman, Bradford Campbell, Joshua Adkins, Neal Jackson, Prabal Dutta. The Internet of Things Has a Gateway Problem. In *Proceedings of the 16th Workshop on Mobile Computing Systems and Applications*. HotMobile '15. Santa Fe, New Mexico, USA. February 2015. Workshop.
- **Thomas Zachariah**, Rafael Isaac, Lilian Kim, Norberto Rios. Development of Space Weather Monitoring System and Statistical Study of GPS Scintillations. In *American Geophysical Union Fall Meeting 2012*. AGU '12. San Francisco, California, USA. December 2012. Poster.
- Hyomin Kim, Kshitija Deshpande, Calvin R Clauer, Gary S Bust, Geoffrey Crowley, Todd E Humphreys, Lilian Kim, Marc Lessard, Allan T Weatherwax, **Thomas Zachariah**. Ionospheric Irregularities at High Latitudes During Geomagnetic Storms and Substorms: Simultaneous Observations of Magnetic Field Perturbations and GPS Scintillations. In *American Geophysical Union Fall Meeting 2012*, AGU '12. San Francisco, California, USA. December 2012. Poster.

HONORS

- NSF GRFP Honorable Mention, 2015
- Magna Cum Laude — Loyola Marymount University, 2013
- Tau Beta Pi (Engineering Honor Society), since 2011
- Boy Scouts, 1999-2009 — Eagle Scout & Brotherhood Member of Order of the Arrow (Boy Scout Honor Society)