"Alan" Dingtian Zhang

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Education

- **Georgia Institute of Technology** — **Atlanta, GA**
  Ph.D in Computer Science — *2015–Present*
- **Georgia Institute of Technology** — **Atlanta, GA**
  MS in Computer Science, specialized in Human-Computer Interaction — *2013–2015*
- **Tsinghua University** — **Beijing, China**
  BS in Computer Science and Technology — *2009–2013*

Research

- **COSMOS** *'COmputational Skins for Multifunctional Objects and Systems'*

  Leading a team to design and develop ubiquitous computational skins that weave into everyday life, which is an collaborative effots across disciplines to fabricate flexible nanomaterial non-silicon circuits into sensor networks which can collect, process, and communicate data with energy harvested from the environment.

- **Whoosh** *'Non-voice Acoustics for Low-Cost, Hands-Free, and Rapid Input on Smartwatches'*

  Worked in a team to develop Whoosh, a non-voice acoustic input (e.g., blowing, shooshing, and other dynamicevents) for low-cost and rapid interaction on smartwatch. Designed and 3D-printed a passive watch case inspired by traditional Asian flute to expand the vocabulary (directional and bezel blows) for commodity smartwatches.

- **Roomscale Augmented Reality:** *'Applying Design Studio Pedagogy in STEM Learning with Novel Presentation and Sensing Technologies'*

  Led development of projected augmented reality to add design studio learning models to a classroom for STEM classes that encourage creativity, innovation, and help build strong peer learning environments. Students do classwork using an enhanced version of Pythy, a web IDE for Python and Jython, that captures students' work and displays it around the room. We leverage the Microsoft RoomAlive Toolkit to construct a room-scale augmented reality using pairs of projectors and depth cameras. The system "pins" students' work to the walls, where teachers and students can view, interact with, and discuss.

- **Mobile Brain-Computer Interface:** *'Quadcopter Navigation Using Google Glass and Brain-Computer Interface'*

  Developed assistive technologies for ALS patients to explore surroundings with wearable technology and a camera-mounted quadcopter. Google Glass is used to creating telepresence by displaying drone-retrieved first-person view, and presenting visual stimili for Steady-State Visually Evoked Potential (SSVEP). OpenBCI, a mobile Brain-Computer Interface, acquires user's electroencephalogram (EEG) for real-time analysis. User's attention to different icons presented on Glass is used to navigate the quadcopter wirelessly.

- **Smartphone Input with Motion Sensors:** *'BeyondTouch: Extending the Input Language with*

Built-in Sensors on Commodity Smartphones'

Worked in a team to develop BeyondTouch, which extends and enriches smartphone inputs to a wide variety of additional tapping and sliding inputs on the case of and the surface adjacent to the smartphone, by using only existing sensing capabilities on a commodity smartphone. Three types of interactions – one-handed, two-handed, and on-table, are implemented to support a variety of application scenarios. A hybrid method of rule-based and machine learning techniques is used for user input recognition.

Employment

- **Georgia Institute of Technology** — **Atlanta, GA**
  Graduate Research Assistant — *January 2016–Present*

  Leading student researcher of COSMOS project under the supervision of Dr. Gregory Abowd. Leveraging the synergy of a team of computer scientists, electrical engineers, and designers to envision and prototype computational skins of the future.

- **Technicolor Research** — **Los Altos, CA**
  Research & Innovation Intern — *May 2016–August 2016*

  Worked under Dr. Kent Lyons to explore continuous finger tracking in 3D mixed reality using magnetic field. Developed algorithms track in 5 degrees of freedom and a low-cost, energy-efficient tracking system.

- **2Dme** — **Cleveland, OH**
  Technical Co-Founder — *May 2014-August 2014*

  Co-founded a startup and successfully landed on incubator Bizdom by coordinating six teams of engineers and artists. Led development of face-to-face chatting technology featuring customizable 2D avatars with real-time facial expression. Worked on human facial feature extraction, rule-based scalable vector graphic (SVG) face animation in Unity, and Android development.

Publications

Reyes, Gabriel, Dingtian Zhang, Sarthak Ghosh, Pratik Shah, Jason Wu, Aman Parnami, Bailey Bercik, Thad Starner, Gregory D. Abowd, and W. Keith Edwards. "Whoosh: non-voice acoustics for low-cost, hands-free, and rapid input on smartwatches." In *Proceedings of the 2016 ACM International Symposium on Wearable Computers*. ACM, 2016.

Blair MacIntyre, Dingtian Zhang, Ryan Jones, Amber Solomon, Elizabeth DiSalvo, Mark Guzdial. "Using Projection AR to Add Design Studio Pedagogy to a CS Classroom." In *2016 IEEE Virtual Reality (VR)*. IEEE, 2016.

Cheng Zhang, Anhong Guo, Dingtian Zhang, Caleb Southern, Rosa Arriaga, Gregory Abowd. "BeyondTouch: Extending the Input Language with Built-in Sensors on Commodity Smartphones." In *Proceedings of the 20th International Conference on Intelligent User Interfaces*. ACM, 2015.

Davis, Nicholas, Yanna Popova, Ivan Sysoev, Chih-Pin Hsiao, Dingtian Zhang, and Brian Magerko. "Building Artistic Computer Colleagues with an Enactive Model of Creativity." In *Proceedings of 5th International Conference on Computational Creativity*. The International Association for Computational Creativity, May 2014.