

# PRAMOD KOTIPALLI <https://p13i.io/>

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## SUMMARY

- » Experienced engineer driven towards making *novel* contributions in research, formerly in entrepreneurship
- » Research interests: human-computer interaction, human-centered product design, graphics, A.I., & robotics
- » Award-winning filmmaker, photographer, & graphic artist · Advocate for diversity & inclusion in STEM

## EDUCATION

### Stanford University

September 2019 - June 2022

*Masters of Science · Computer Science · June 2022 (expected)*

Research advisor: Sean Follmer

Concentrations : Human-Computer Interaction & Artificial Intelligence

Coursework: Image Synthesis Techniques (Matt Pharr & Pat Hanrahan) · Design of Smart Products (Sean Follmer) · Domain Specific Programming Models and Compilers (Fred Kjolstad) · Engineering Design Optimization (Mykel Kochenderfer) · Physically-Based Animation and Acoustics (Doug James)

### Georgia Institute of Technology

August 2015 - August 2019

*Bachelors of Science · Computer Science · 2019*

Primary research advisor: Thad Starner

GPA: 3.83/4.00 (Faculty Honors: 4.00 GPA in Spring 2016, Summer 2016, Spring 2017, & Spring 2018 terms)

Coursework: Machine Learning (Karl Gemayel) · Game A.I. (Stephen Lee-Urban) · Data Structures (Monica Sweat) · Design and Analysis of Algorithms & Automata and Complexity (H. Venkateswaran) · Assembly & C (Pat Leahy) · Object-Oriented Programming (Chris Simpkins) · Perception and Robotics (Sonia Chernova) · Number Theory and Cryptography (special topics w/ Matt Baker) · Behavioral Imaging (special topics w/ James Rehg) · History of Modern Industrial Design (Joyce Medina)

## RESEARCH EXPERIENCE

### SHAPE Lab @ Dept. of Mechanical Engr. @ Stanford University

Stanford, CA (remote)

Graduate Research Assistant w/ Prof. Daniel Drew & Prof. Sean Follmer

September 2019 - present

- » *Sound-source localization for multi-agent robotics systems (w/ Prof. Daniel Drew, University of Utah)*
  - » Conducted literature review, experimented with Unity Game Engine's acoustics rendering
- » *Model-predictive control for encounter-type haptics in virtual reality (w/ Eric J. Gonzalez. Ph.D. candidate)*
  - » Surveyed relevant literature, implemented haptic redirection algorithms, currently contributing to Applications section of upcoming *CHI 2022* submission

### Department of Genetics @ School of Medicine @ Stanford University

Stanford, CA (remote)

Software Engineer · Part-time

March 2020 - July 2020

- » Developed software for early detection of COVID-19 from wearable fitness trackers with 1,200+ users
- » Led development of iOS & Android features to streamline onboarding & improve data collection process
- » *"PHD: A Scalable, Secure, and Interoperable Platform for Big Data-Driven Health Management"* · Under review in *Nature Communications* · More information: <https://innovations.stanford.edu/wearables>

### School of Interactive Computing @ Georgia Institute of Technology

Atlanta, GA

Project Lead + Undergraduate Research Asst. (w/ Prof. Thad Starner)

January 2018 - August 2019

- » *"RF-Pick: Comparing Order Picking Using a HUD with Wearable RFID Verification to Traditional Pick Methods"* published to **ACM International Symposium on Wearable Computers** with **Best Paper Award**
  - » Study contributions: surveyed literature to ensure user study is consistent with prior work, organize data collection/logging process, perform statistics tests, & paper writing · Presented to Georgia Tech undergraduate research symposium
  - » Technical contributions: embedded systems, networking, in-study visualizations, automation of pick-list PDF generation, & post hoc error labeling tool for study team
- » *"Comparing Order Picking Guidance with Microsoft HoloLens, Magic Leap, Google Glass XE and Paper"* published to **ACM HotMobile 2021** · *"Towards Finding the Optimum Position in the Visual Field for a Head Worn Display Used for Task Guidance with Non-registered Graphics"* published to **ACM IMMUT March 2021**
  - » Study contributions: advise main study team on user study design & interface design
  - » Technical contributions: engineered pick lists to ensure consistency across conditions, implement sophisticated combinatorial graph search algorithm to determine optimal pick traversal paths
- » *"Notification Perception with Visual Distraction on Google Glass and Smartwatches (Dual-Task)"*
  - » Study contributions: literature review, designed dual-task user study with meticulous 20-page procedures guide, authored/revised IRB until approval, & piloted two participants · First self-directed study
  - » Technical contributions: Engineered Android app to present visual search task that dispatched notifications to paired Google Glass apps and Android Wear apps

Undergraduate Research Assistant

January 2016 - December 2016

- » Developed predictive health analytics for heart disease patients with Professor James Rehg, Wall Lab
- » Used MATLAB and Python to apply DSP + HMMs to on-body sensors to identify concerning behavior

## RESEARCH PUBLICATIONS

### Towards Finding the Optimum Position in the Visual Field for a Head Worn Display Used for Task Guidance with Non-registered Graphics

**Published** to ACM IMWUT (March 2021 edition)

Authors: G. Lin, G., M. Haynes, S. Srinivas, **P. Kotipalli**, T. Starner

<https://dl.acm.org/doi/10.1145/3448091>

October 2018 - March 2021

### Comparing Order Picking Guidance with Microsoft Hololens, Magic Leap, Google Glass XE and Paper

**Published** to ACM HotMobile 2021

Authors: G. Lin, T. Panigrahi, J. Womack, D. Jatin Ponda, **P. Kotipalli**, T. Starner

<https://dl.acm.org/doi/10.1145/3446382.3448729>

October 2018 - February 2021

### PHD: A Scalable, Secure, and Interoperable Platform for Big Data-Driven Health Management

**Under Review** in Nature Communications

March 2020 - June 2020

Authors: A. Bahmani, A. Alavi, T. Buerger, S. Upadhyayula, Q. Wang, S. Krishna Ananthakrishnan, D. Celis, D. Gillespie, G. Young, Z. Xing, M. Hoang Huynh Nguyen, A. Haque, A. Mathur, J. Payne, G. Mazaheri, J. Kenichi Li, **P. Kotipalli**, L. Liao, B. Rolnik, A. Celli, O. Dagan-Rosenfeld, E. Higgs, W. Zhou, C. Lauren Berry, K. Grace Van Winkle, K. Contrepolis, K. Bettinger, X. Li, M. Snyder

### RF-Pick: order picking using a HUD with wearable RFID verification

**Best Paper Award** @ ACM Intl. Symposium on Wearable Computers

January 2018 - October 2018

Authors: C. Thomas, T. Panagiotopoulos, **P. Kotipalli**, M. Haynes, T. Starner

<https://dl.acm.org/doi/10.1145/3267242.3267290>

## ACADEMIC AWARDS

### Best Paper Award

Singapore

ACM International Symposium on Wearable Computers (ISWC)

Awarded: October 2018

- » "RF-Pick": Awarded for conducting a carefully-controlled study comparing new methods in wearables to current practices in the practical area of logistics.

### Faculty Honors

Georgia Inst.of Tech, Atlanta, GA

Office of the Registrar @ Georgia Institute of Technology

2016-2018

- » Awarded to students who earn a 4.0 GPA in a full-time academic semester · Earned for four semesters

### <gt-webdev/>

January 2016 - December 2018

**President**, Officer, Technical Speaker

College of Computing

- » Worked with several officers to routinely design (and re-design) web dev curriculum for beginner students
- » Lead weekly club meetings for 100+ students in attendance & hosted one-on-one "office hours" Led
- » Led impactful initiatives as senior officer and President including: stronger & inclusive recruiting efforts, consistent and engaging communication, and project-based collaborative learning projects for students.
- » Closely interfaced with College of Computing leadership to develop an inclusive learning environment

## EXTRA-CURRICULAR ACTIVITIES

## INVITED TALKS

### eWEAR Initiative (Stanford wearable computers interest group)

Stanford University

"Tangible teleportation kit: reducing the physical-emotional gap between 2D video calls and in-person interactions through friendly, immersive wearable haptics"

November 2020

Presented by **Pramod Kotipalli** on behalf of Tangible Smart Clothing, Inc. Content contributors include Akshay Dinakar, Paul Lavengco, and Katie Fo.

### Undergraduate Research Opportunities (UROP)

Georgia Institute of Technology

"RF-Pick: order picking using a HUD with wearable RFID verification"

April 2019

Presented by **Pramod Kotipalli** under guidance from Profs. Thad Starner & Gregory Abowd.

### Cloud Rainstorm (weekend Splash program for high schoolers)

Learning Unlimited (learningu.org)

"The products we live with: a brief history of modern industrial design"

May 2021

Prepared and presented by **Pramod Kotipalli**.

"Stories in 2D: Sketching & Design Thinking"

May 2021

Prepared and presented by (alphabetically) Elyse Chase, Brian Do, **Pramod Kotipalli**, and Ahad Rhaf.

## GRANTS

### CHI 2021: Gary Marsden (Virtual) Travel Award

Remote

Sponsor: ACM SIGCHI

March 2021

### Richard Tapia Diversity Conference attendance grant

Remote

Sponsor: Stanford Computer Science Department

October 2020

### Grace Hopper Conference travel grant

Houston, TX

Sponsor: Google

October 2016

## ACADEMIC SERVICE

### Conference Reviewer

ACM ISWC 2021

### Course Assistant

ENGR 145S: Technology Entrepreneurship

Stanford Mgmt. Sci. & Engr.

Summer 2021

## PATENTS

### Wearable Haptic System for Immersive Social Telepresence (Co-Inventor)

USPTO Provisional Patent No. 63086349 (Assigned to Tangible)

Filed: May 2020

Authors: A. Dinakar, **P. Kotipalli**, P. Lavengco, K. Fo

## INDUSTRY EXPERIENCE

### Space Exploration Technologies Corp. (SpaceX)

Hawthorne, CA

Software Engineering Intern

September 2017 - December 2017

- » Designed, implemented, tested software solutions · Worked closely with PMs and UX designers
- » Automated supply chain processes in ERP: mitigated legal risk, increased business efficiency
- » Engineered SQL Server + .NET/C# backend that exposed RESTful APIs to AngularJS front-end

### Cisco Systems

San Jose, CA

Software Engineering Intern

May 2017 - August 2017

- » Architected, researched, implemented test automation framework for Cisco's Cloud DVR services
- » Developed load testing and analysis framework to generate HTTP traffic & collect relevant statistics
- » Designed AngularJS front-end with Python/Django REST API and ELK · Orchestrates Docker containers
- » Saved 10+ hr/wk of manual and error-prone OS/network configuration · Increased engineer efficiency
- » Managed two full-time engineers · Deployed by AT&T DirecTV NOW to the scale of 1.1m monthly users

### ATSDR @ U.S. Centers for Disease Control and Prevention (CDC)

Atlanta, GA

Technical Consultant

August 2018 - May 2019

- » Advisors: Brad Goodwin, PhD, Lieutenant, U.S. Public Health Service Commissioned Corps (PHSCC) · Aaron Grober, MPH, CHES, Lieutenant, U.S. PHSCC
- » Researched user requirements, architected, and delivered automated air quality analysis pipeline
- » Drastically reduced time for publishing reports on air quality, assisting CDC in its public health missions
- » Architected and developed desktop application to automate processing data from air quality sensors
- » Worked closely with five other teammates to develop in an Agile method and produce demo videos

### School of Mechanical Engineering @ Georgia Institute of Technology

Atlanta, GA

Lead Software Developer (w/ Dr. Amit Jariwala, Director of Innovation)

January 2016 - May 2018

- » Built service used by 2,500 students and judges in Georgia Tech's Capstone Design Expo.
- » Integrated user feedback for highly-intuitive UX significantly reducing user onboarding.
- » Collaborated through Git-centered workflows with a tight feedback loop from advisers.

### Anomo Inc.

Seattle, WA

Product Management Intern

September 2014 - June 2015

- » Collected user experience feedback, drafted product requirements for anonymous social networking app

## INDUSTRY AWARDS & HONORS

### Winner (Active Tooling Category) & Best Use of Google Cloud

Univ. of Washington, Seattle, WA

Dubhacks for Social Good & Hack'20 (respectively)

September 2020

- » Developed app to documents and analyze police encounters to help mitigate negative interactions
- » Displays Constitutional and Miranda rights while inconspicuously analyzing voice sentiment and context

### Microsoft Prize

Emory University, Atlanta, GA

HackATL

November 2016

- » Created hardware prototype & market strategy for smart watch wearers to shake hands & connect online

## VENTURE- FORMATION EXPERIENCE

### Tangible Smart Clothing Inc. (d.b.a. Tangible Teleportation Co.)

Stanford, CA & Remote

We're building the "world's first teleportation kit" through the use of immersive, on-body haptics · Our hardware lets you to feel the presence of your loved ones at a distance · <https://tangible.team/>

#### Advisor

April 2021 - present

- » Actively supporting team with transition to new software engineering leads
- » Routine conversations with founding team as to user-centered development & product design

#### Co-Founder, Founding Engineer, Head of Software

April 2020 - April 2021

- » Entrepreneurial contributions: Recruited & led software engineering team · Routinely conducted UX research to inform our human-centered design process · Aided in fundraising · Developed company culture
- » Technical contributions: Led company to proof-of-concept, minimum-viable-project video calling cross-platform (React Native) application supported by a Bluetooth Low Energy haptics communication session and real-time internet data channel · Significant engineering effort

### Copilot AI

Atlanta, GA & Stanford, CA

We're building a wearable computer system for front-line warehousing & factory workers that displays critical process information in-situ & hands-free resulting in a more comfortable on-body user experience. We employ proprietary A.I. & computer vision analysis of worker gestures/movements for optimization of manual tasks.

#### Founder

April 2018 - December 2019

- » Entrepreneurial contributions: Conducted need-finding, competitive analysis, investor interfacing, fund-raising, customer pilots, & business analysis
- » Conclusion: Abandoned plan due to poor unit economics & unreasonably-long (in time & capital) distribution strategy due to need for large traveling salesforce & geographically sparse · Authored comprehensive 30-page business plan (available upon request)

### Safely

Atlanta, GA

#### Co-Founder, Founding Engineer (Software)

October 2016 - February 2017

- » Product: Campus-safety wearable computers to replace ineffective Blue Light systems
- » Conclusion: Abandoned due to failed team dynamics · Raised >\$20k in angel & award funding

## VENTURE- FORMATION AWARDS & HONORS

### Accel Fellow @ Accel Leadership Program

Stanford Technology Ventures Program, Dept. of Mang. Sci. & Engr.

Singapore

Accepted: November 2020

- » One of 24 entrepreneurial Stanford graduate students selected for immersive training in leading startups
- » Working with high-growth venture CEOs & other fellows to develop business case studies

### Grand Prize winner

HackATL

Emory University, Atlanta, GA

November 2016

- » Awarded for developing and presenting comprehensive business plan to Atlanta-area venture capitalists
- » Developed wearable tech for on-demand community help in emergency situations on college campuses

## CREATIVE EXPERIENCE & AWARDS

### Freelance Filmmaker, Composer, Photographer, & Graphic Designer

Personal explorations

Anywhere on Earth

December 2018 - present

- » Designed, animated, edited, and published over 40 short videos and 30+ high-quality static renders
- » Demonstrates improving skills in animation, modeling, video production, sound mixing, and vector art
- » Continuing to gain mastery of MAXON's Cinema 4D and Adobe's Creative Cloud products
- » Portfolio continues to grow with new original work uploaded every week: <https://instagram.com/p13i.io/>

### Best in City, Best Film, Best Music

Seattle 48 Hour Film Festival

Seattle

October 2018

- » Served as Composer, Script Supervisor, and Production Assistant for 48-hour film festival production
- » Team also won *Best Actor*, *Best Actress*, *Best Editing*, *Best Direction*, and *Co-Best Writing* amongst 25 teams and 100 talented regional filmmakers

## SELECTED ENGINEERING PROJECTS

### Remembrance Agent

Library to display contextually-relevant notes based on keyboard input

July 2019 - December 2019

- » Based on concept of a Remembrance Agent (RA) was first outlined by Rhodes and Starner in 1997
- » Designed as system that automatically presents contextually-relevant notes, documents, and contacts
- » Integrates with Google's Gmail, Drive, and Cloud Speech APIs through a Java Swing desktop GUI

### Glass Notes for Google Glass

Android, web, and terminal applications to augment memory in class

January 2019 - December 2019

- » Based on system designed by Thad Starner at MIT Media Lab in the late 1990s · redesigned for today
- » Allows for offline note taking using Bluetooth keyboard · periodically syncs to GitHub Gists

## SKILLS

### HUMAN-COMPUTER INTERACTION METHODS

Human-subjects study design (e.g. counter-balancing, dual-task, learning effects, IRB approvals) · qualitative interview design · data visualization, statistics tests · UX research · UI design/implementation

### COMPUTER SYSTEMS, DESIGN, & ARCHITECTURE

General-purpose algorithmic programming (advanced) · Full-stack software engineering at all levels (advanced) from custom wearable firmware to advanced back-end design patterns (e.g. asynchronous task queues) · Machine & deep learning & NLP pipelines (e.g. TensorFlow, Keras, PyTorch, MATLAB) · High-performance computing (e.g. computer graphics in C++) · Distributed system design (e.g. containerization, scaling, asynchronous task queues) · Dependency injection · Reflection

### PACKAGING & DEPLOYMENT

Vagrant · Docker · Heroku · Microsoft Azure · Digital Ocean · Gradle · NuGet · Google Play deployment · Apple App Store Connect Deployment

### VERSION CONTROL & CONTINUOUS INTEGRATION

Git · Self-hosted Jenkins pipelines · Travis CI · CircleCI, Wercker · GitHub Actions · Automated Testing Strategies (end-to-end, integration, unit, etc.)

### DATABASES

Microsoft SQL Server (T-SQL) · PostgreSQL · Redis · MySQL · Firebase Realtime Database · MongoDB

### A.I. & MACHINE LEARNING

Digital Signal Processing · MATLAB · scikit-learn · TensorFlow

### GRAPHIC DESIGN, ANIMATION, &

Sketch (macOS) · Adobe (Illustrator, After Effects, Premiere Pro, Photoshop, Audition, InDesign, Lightroom, Bridge, XD) · MAXON Cinema 4D · Octane Render · World Creator 2 (procedural landscape generation), PBRT Renderer (<https://pbrt.org/>) · Portraiture

### DEVELOPMENT FRAMEWORKS

Django REST Framework · iOS · Android · React Native · .NET · Angular · Ionic · NodeJS · Android · Retrofit · Google Glass Development Kit (GDK) · Dagger (Android dependency injection) · LLVM C++ API · Unity

### PROGRAMMING LANGUAGES

Python (advanced) · C# (advanced) · Java (advanced) · C++ · JavaScript/TypeScript · C# · Swift · HTML5 / CSS3 · Shell · C · MATLAB

### FABRICATION

Epilog Laser · Universal Laser System · Arduino & electronics prototyping

## PORTFOLIOS

### Online portfolio:

<http://portfolio.p13i.io/>

### PDF portfolio:

<http://pdf.portfolio.p13i.io/>

### Technical writing:

<http://writing.p13i.io/>