healthcare hackathon

powered by

forge

Event Report
2014

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1. Overview

Forge held Atlanta's first Healthcare Hackathon on August 22 - 24. Hackathons are intense innovation events that bring together clinicians, engineers, and entrepreneurs to solve unmet clinical needs with technology. We are excited to share with you our event report.

Institutions Represented

EMORY UNIVERSITY   Georgia Tech   The University of Georgia   VANDERBILT UNIVERSITY

Numbers

$40,000 raised   34 hours to hack   ATDC   40+ mentors

90 participants   7 pain points   4 min pitches   35 sponsors

Judge Affiliations

ROCK HEAL+H   doximity   TECH SQUARE VENTURES   Georgia Tech VentureLab

flashpoint   arbor PHARMACEUTICALS. LLC.   EMORY UNIVERSITY   Georgia Tech

Pain Points (reframed as challenges)

1. Facilitate early language exposure to babies in poor families.
2. Reduce central line infections.
3. Reduce the occurrence of VTE in children.
4. Reduce foreign objects left in patients after surgery.
5. Improve workflow coordination between different care teams in the hospital.
6. Link peripheral devices with hospital electronic health records (EHRs).
7. Create a smartphone-based patient database for poor countries with no IT infrastructure.

We kicked off Hackathon "Demo Day" by encouraging teams to apply to two startup accelerator programs: I Corps South from the NSF / VentureLab, and NeuroLaunch, which works with neuroscience startups.

After the pitches, winners were selected by a panel of 9 esteemed judges.

1st place: Chatterbox is a line of disposable diapers imprinted with conversation topics reminding parents to talk to their babies and expose them to new vocabulary (pain point #1). The Chatterbox team received a $5,000 cash prize, free patent filing with IP Smartup, two-hour strategic planning package with Medtown Ventures, $700 of course credit from General Assembly, and one year of free virtual machine support from Cirracore.

2nd place: MediTracker is a medical device used to detect if and where a needle is present in a patient's body after surgery (pain point #4). The team won $1,000 in cash, a free patent filing with Waddey Patterson and $700 of course credit from General Assembly.

Crowd favorite: QuID is an application used to address patient flow and team coordination in the hospital (pain point #5). The app uses a patient wristband barcode to track real-time patient information. The crowd favorite was selected by the audience via SMS text message. They won office hours from VentureLab entrepreneurial mentors.

Other pitches:

- Footsie: a footpad sensor video game used to stimulate blood flow and improve circulation to prevent blood clots in children.
- TechBilt: a scanning device for detecting needles misplaced during surgery.
- Intellitrak: a mobile database application using facial recognition, GPS and fingerprints.
- Heliodome: a device using ultra-violet light to disinfect the area around a catheter.
- Readables: e-books that change to expose children to more vocabulary.
- Flow Buddy: a mobile pneumatic pressure device in the form of a cordless cuff; stimulates blood flow and improves circulation to prevent blood clots in children.
- Word Pals: mobile app that financial incentivizes parents to read to their children.
- AccuraJackets: an application that uses facial recognition and connects to hospital ID bracelets to improve patient flow and team coordination during a patient's admission.
- MediSync: an application that extracts data from medical devices in hospital rooms and connects to electronic health records through a barcode on the patient's wristband.
- Koünter: a device which tracks surgical tools by weighing and counting them.
- BabyBite: a wearable word counter; encourages parents to increase children' vocabulary.

We ended the Hackathon with a keynote from a prominent Emory Medicine alumnus, Dr. Nate Gross. Nate co-founded of Rock Health and Doximity, and shared his thoughts about how tech is changing the culture of innovation in medicine. He urged participants to make a difference through their work, even if it was not VC-fundable.

Pictures from the Hackathon can be found at our Flickr album.
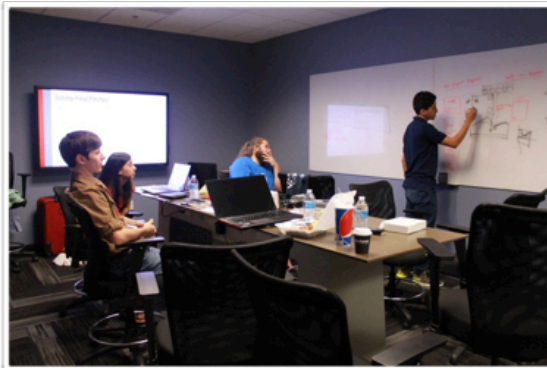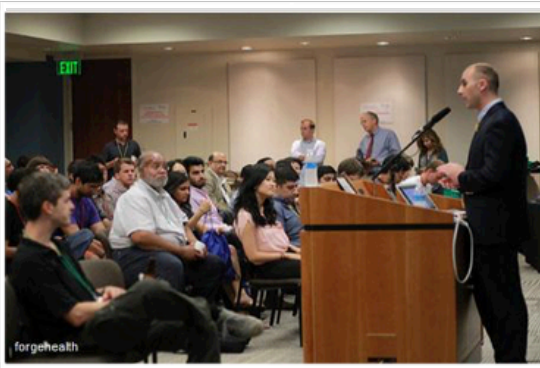
2. Sponsors

CITY OF ATLANTA

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KASIM REED
MAYOR

August 5, 2014

Greetings:

As Mayor of the City of Atlanta, I am pleased to welcome Forge and the participants of the *Inaugural Healthcare Hackathon*.

The *Inaugural Healthcare Hackathon* will bring together business professionals, engineers, students and clinicians to develop innovative methods to solve problems within today's healthcare system. Over the course of three days, participants will collaborate and generate ideas that will not only benefit patients and doctors, but will also strengthen Atlanta's expanding startup community. I salute these individual participants and organizations that exemplify leadership, and a commitment to build smarter, safer communities.

Last year, City of Atlanta officials, together with representatives of Invest Atlanta and Startup Atlanta hosted two city Govathons. The Govathon, a civic-focused hackathon, brings together members of Atlanta's dynamic technology, development and design community with government officials to develop ideas and solutions to improve city services. It is my hope that the *Inaugural Healthcare Hackathon* will generate new ideas that will change lives, and shape the technology and development industry in our great city.

On behalf of the people of Atlanta, I extend best wishes to you for a memorable and remarkable occasion.

Sincerely,

Kasim Reed

Legendary sponsors contributed $5,000 or equivalently significant donations to Forge:

EMORY INNOVATIONS, INC. JAWBONE® Atlanta Clinical & Translational Science Institute TECH SQUARE LABS

atdc GEORGIA TECH IONIC SECURITY Georgia Tech VentureLab TEDMED

Heroic sponsors contributed financial support, donations-in-kind, mentorship, and other miscellaneous forms of sponsorship to Forge:

doximity Metro Atlanta Chamber Intellectual Property SmartUp makerstaker

WADDEY PATTERSON INTELLECTUAL PROPERTY LAW The IRON YARD GA GENERAL ASSEMBLY arbor PHARMACEUTICALS, LLC.

ApolloMD octane coffee+bar MEDTOWN VENTURES Emory Center for Experiential Learning

INVENTION STUDIO Georgia Tech Catering Services A division of Dining Services SEMSS SOUTHEASTERN MEDICAL SCIENTIST SYMPOSIUM RISING ROLL GOURMET CAFE

UBER GEORGIA BIO The Life Sciences Partnership EMORY NELL HODGSON WOODRUFF SCHOOL OF NURSING EMORY UNIVERSITY SCHOOL OF MEDICINE Department of Dermatology

VALIDIC CIRRACORE PATIENTCO TALK WITH ME BABY

www.forgeatl.com

3. Judges

Nate Gross, MD, MBA (keynote speaker)

Nate is the co-founder of Rock Health and Doximity. An Emory medical school alumnus, he serves on the advisory board for the SXSW Accelerator and the Institute for Pediatric Surgical Innovation at Children's National Medical Center. Nate has given talks at Stanford Medicine X, Health Data Initiative, NASA, Health 2.0, AMSA, AAMC, Medicine 2.0, MD Anderson Grand Rounds, UCSF, and Stanford.

Blake Patton

Blake is the Managing Partner of Tech Square Ventures, a seed and early stage venture fund based in Technology Square in Atlanta. Tech Square Ventures invests in innovative technology startups in the Southeast that have the potential to transform their markets. Blake has years of leadership experience in technology, and serves on the Board of Directors for Venture Atlanta, Atlanta CEO Council, and UserIQ.

Fred Sanfilippo, MD, PhD

Fred is the Director of the Healthcare Innovation Program at Emory & Georgia Tech. He improves organizational performance, transforms culture, and aligns missions & operations. Fred has led organizational and cultural changes at Johns Hopkins, Ohio State, and Emory. He has published over 250 articles, been awarded three patents, won $30M in research support, mentored 33 students, and given 200 invited talks.

Keith McGreggor, PhD

Keith is the Director of VentureLab, the #1 early-phase technology university incubator in the world. He is a globally recognized leader in entrepreneurial education and incubator development with 30 years of commercial and enterprise product development experience. Keith is also a serial entrepreneur, having founded or co-founded six commercially successful software companies.

Merrick Furst, PhD

Merrick is the founder and Director of FlashPoint, a first-of-its-kind startup engineering™ studio. He is Georgia Tech's first Distinguished Professor of Computing. Merrick co-founded Damballa and Essential Surfing Gear. Previously, he was president and director of the International Computer Science Institute at UC Berkeley, and professor and associate dean of Computer Science at Carnegie Mellon University.

Steven Caras, MD, PhD

Steven is the VP of Clinical Development at Arbor Pharmaceuticals. He has decades of experience evaluating early stage medical device companies, and developing phase I-IV clinical trials. Previously, Steven was Medical Director at Abbott Labs for 13 years, and a reviewer at the FDA for drug products. Steven trained as a gastroenterologist, and has a background in biomedical and chemical engineering.

Susan Shapiro, PhD

Susan is Clinical Professor, Associate Dean for Clinical and Community Partnerships at the Nell Hodgson Woodruff School of Nursing, and the Corporate Director for Nursing Research and EBP for Emory Healthcare. Her expertise is in working with nurses and School of Nursing faculty to develop, conduct, and disseminate clinically based nursing studies across Emory Healthcare.

Todd Sherer, PhD

Todd is the Associate VP for Research, and Executive Director of the Office of Technology Transfer at Emory University. He has 22 years of experience in technology transfer. Todd speaks at technology transfer, economic development, and commercialization conferences across the globe. He was the past President for the Association of University Technology Managers.

Wayne Li

Wayne is the Oliver Professor of Practice in Design and Engineering at Georgia Tech, leading joint teaching initiatives in mechanical engineering and industrial design. He also teaches visual communication and digital media techniques at the Institute of Design at Stanford. Previously, Wayne worked on innovation, design, and brand strategies for Pottery Barn, Volkswagen, and Ford Motor Company.

4. Mentors

Business mentors	
Name	What they do
Richard Duszak, MD	Vice Chair For Health Policy and Practice, Department of Radiology, Emory University School of Medicine
KC Diwas, PhD	Assistant Professor, Goizueta Business School
Scott Henderson	Principal, VentureLab
Osama Hashmi	Co-founder, VitaminC
Harold Solomon	Principal, VentureLab
Moira Vetter	Founder & CEO, ModoModo Agency
Kathleen Kurre	Innovation Subcommittee Member, ATL Regional Commission
Darrell Glasco	Social Mission Architects
Gary McClure	Consultant & business professional
Eve McClure	Consultant & business professional
Richard DiMonda	Medical device business development
David Guy	Partner, MakerStaker
Phil Hendrix, PhD	Founder of Immr, Analyst with Gigaom
Kevin Walton	Senior Associate, PwC
Robert Arkin	CEO, Sensiotec
Fred Tanzella	CEO, Cirracore
Richard Berman	Healthcare IT Sector Leader, ATDC
James Stubbs, PhD	Principal, VentureLab
Phillip Han	Co-founder, Lightshed Health
Michael Burke	Co-founder, Lightshed Health
Michael Ames	Chief Mechanic & Owner, The Biz Garage

Technology mentors	
Name	What they do
Gari Clifford, PhD	Associate Professor, Biomedical Informatic & Biomedical Engineering, Emory University & Georgia Institute of Technology
Eric Williams	Student, Iron Yard
Rene Candelier	Student, Iron Yard
David Askew	Student, Iron Yard
Riaz Virani	Student, Iron Yard
Matthew Thompson	Student, Iron Yard
Andrew House	Student, Iron Yard
Nick Peterson	Student, Iron Yard
Kalson Kalu	Student, Iron Yard
Diego Medina	Student, Iron Yard

Technology mentors	
Name	What they do
James Rains	Design Instructor, GT BME
Raja Schaar	Design Instructor, GT BME
Ramesh Sringeri	Software development
Ruwan Subasinghe	BMED machine shop
Gauthami Penakalapati	Project Coordinator at Innovations for Poverty Action
Joshua Titus	CEO & Founder, Gozio Health
Joshua Silver	VP Product Development, PatientCo
Brent Fagg	Director Strategic Alliances, Validic

Clinical mentors	
Name	What they do
Darria Gillespie, MD, MBA	Executive VP Clinical Strategy, Sharecare Inc Assistant Professor, Emory Emergency Medicine
Jordan Amadio, MD, MBA	Resident neurosurgeon, Emory
Chandan Devireddy, MD	Assistant Professor, Emory Interventional Cardiology
Richard Gitomer, MD	Primary care physician
Robert Swerlick, MD	Professor & Chair, Emory Dermatology
Joel Zivot	Assistant Professor, Emory Anesthesiology & Critical Care Medicine
Lisa Bernstein, MD	Associate Professor, Emory General Medicine and Geriatrics
Roger Williams, DO	Interventional Radiology
Bryce Gillespie, MD	Surgeon, Hand and Upper Extremity Center of Georgia
Ingrid Duva, PhD, RN	Instructor, School of Nursing
Ann Connor, MSN, RNCS, FNP	Associate Professor Clinical, School of Nursing
Alexis Uwilingiyimana	Public health physician
Matt Hawkins, MD	Assistant Professor, Emory Pediatric Interventional Radiology
Eun Seok (Julie) Cha, PhD, MPH, MSN	Assistant Professor, Emory School of Nursing
Brandon Aylward, PhD	Assistant Professor, Emory Pediatrics
David Ku, MD, PhD	Lawrence P. Huang Chair Professor of Engineering Entrepreneurship, Regents Professor, Georgia Tech
Howard Chiou	MD-PhD student, Emory Anthropology & School of Medicine
Chris Hermann, PhD	President & CEO, Clean Hands Safe Hands
Arash Harzand, MD, MBA	Chief Resident, Quality and Patient Safety, Emory Medicine
Angela Fusaro, MD	Assistant Professor, Emory Emergency Medicine

5. Pain points

"Pain points" are unmet clinical needs, real or perceived. Entrepreneurs and engineers create opportunities for themselves by creating solutions to those pain points. Solutions create value for everyone.

We invited healthcare professionals from Emory Healthcare to submit pain points via an online form. Most of the submissions came from medical students, residents, fellows, and faculty from Emory University School of Medicine and the Nell Hodgson Woodruff School of Nursing.

Seven pain points were selected by the Forge Healthcare Hackathon planning committee. Good pain points were characterized by having three properties:

1. **Impactful:** pain points should affect a large number of patients, cause non-trivial morbidity and mortality, and have a large market.
2. **Feasible:** approaches to fixing the pain point could feasibly involve technology-based solutions over a weekend.
3. **Problem-focused:** We believe clinicians know about unmet clinical needs, while engineers are experts at solving problems. Good pain points explain the clinical and/or social context of a problem, and do not suggest specific solutions.

We organized the final seven pain points using a "challenge / problem / impact" format.

| #	Challenge	Problem	Impact
1	Facilitate early language exposure to poor babies to close the word gap and promote healthy child development	Children born into low-income families hear 30 million fewer words in the first four years of life than children from higher income families. This leads to cognitive delays	This leads to stark disparities in academic performance, attainment and risk for chronic disease
2	Reduce the incidence of CLABSI and related morbidity and mortality	Nearly 250,000 Central Line-Associated Bloodstream Infections (CLABSI) occur each year in US hospitals	CLABSI leads to $2.8 billion in annual costs & 25,000 preventable deaths
3	Improve intermittent pneumatic compression devices (IPCs) to reduce the occurrence of VTE in children	IPCs meant for adults are not useful for pediatric patients. Venous Thromboembolism (VTE) affects 500,000 people each year in the US, and children represent the largest growing population at risk which has increased by 64% in the past decade. The use of IPCs can reduce the risk of VTE by 60%. However, IPCs are not child-compatible, and are often bulky, leading to fall risk	Estimates suggest that 60,000-100,000 people die each year from VTEs
4	Reduce the incidence of unintended retention of foreign objects (URFOs) left in patients after surgery	Up to 1500-2000 URFOs occur each year in the USA	URFOs increase the average cost of care by $166,000 per patient
5	Improve workflow coordination between different care teams in the hospital	Approximately 20% of hospitalized patients in the US reported communication problems between members of their care teams	80% of serious medical errors may be due to miscommunication between different care teams
6	Link peripheral devices with hospital electronic health records (EHRs)	In-hospital peripheral devices (e.g. IV pumps, feeding tubes, output drains) automatically record and display relevant data but are not synchronized with EHRs	Synchronizing peripheral devices could reduce human errors in transcribing, eliminate extra steps, and save time
7	Create a robust, cheap, smartphone-based solution for identifying individual patients in a database	Healthcare workers lack a robust point-of-care mobile solution for identifying patients and accurately associating them with their medical data. Patient identification is imperfect in clinical situations, particularly in low-resource areas. Illiteracy, human error and antiquated or incompatible storage systems are major factors. Often, identification mistakes or deliberate falsification of identities occur	Asia, Africa and Latin America lack robust patient identification systems, prevent providers from tracking patients or referring them for correct treatment, increasing the likelihood of significant medical errors, and wasting resources and time.

6. Logistics

Fundraising

We identified 324 academic institutions, departments, foundations, technology companies, accelerators, incubators, investment syndicates, and legal firms with potential interest in healthcare startups. We approached 80, and successfully acquired support from 35 sponsors.

We requested cash sponsorship, donations-in-kind, and mentorship. Our value proposition was highlighted in a recruitment letter we personalized for each sponsor.

We secured $20,198.35 of discretionary funding.

Sponsorship success (# of sponsors)
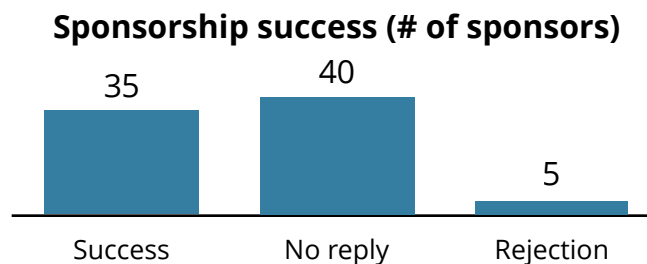
We also secured significant in-kind donations.

Sponsor	Donation
MedTown Ventures	2 hr consulting ($2,500 value)
VentureLab	Office hours with mentors
Iron Yard	IT support & $500 class credit
Octane	Coffee ($150 value)
IP Smartup	Provisional patent filing and group discounts ($1,500+ value)
Validic	API support for 1 year
Cirracore	VMWare access for 1 year for winner
Emory Department of Surgery	Medical supplies
Emory ExCEL lab	Medical supplies
TEDMED	Four partial scholarships to TEDMED 2015 ($10,000 value)
Uber	$30 discount for all participants
General Assembly	$1400 class credit for winning teams $30 class credit for all participants
ATDC	Venue space ($10,000 value)
Jawbone	Jawbone UP24 devices ($900 value)
Waddey & Patterson PC	Provisional patent filing ($1,500 value)

Recruiting organizers, volunteers, and judges

Organizers were recruited in a top-down fashion by the Forge leadership team. We invited a colleague we knew to be competent, organized, and ambitious to serve as Director for the hackathon. Next, we identified and organized major areas of work into specific positions: Mentors and judges were recruited on an invite-only basis.

Volunteers were recruited via email invitations to our listserv, as well as social media (Twitter & Facebook).

Sponsor	Donation
Director	Distributed tasks to team
Food/Alcohol Czar	Purchased food and alcohol; found deals with vendors
Swag Czar	Purchased lanyards, t-shirts, mugs, pens, and goodie bags
Location Leader	Scouted and secured event venues
Fundraising (x2)	Reached out to sponsors to set up meetings with Forge leaders and stakeholders
IP Czar	Draft IP policy and communicated with tech transfer offices
Judge/Mentor Czar (x2)	Recruited and coordinated Saturday's mentorship session as well as Sunday's judging panel
Volunteer Czar	Coordinated volunteers who helped with setup & cleaning

Organizing information

We used Google Drive to ensure every spreadsheet and document was up to date.

Marketing

We advertised four ways for people to get involved:

1. Hack
2. Volunteer:
3. Mentor
4. Submit a pain point

The event was advertised online via listserv emails, Twitter, and Facebook. ACTSI and Emory Medicine emailed the event to Emory faculty, fellows, residents, and medical students. Other media sponsors included Georgia Bio, the Department of Biomedical Engineering at Georgia Institute of Technology, and the Metro Atlanta Chamber.

Feedback

We solicited feedback from all participants - judges, mentors, hackers, and attendees - to learn how to improve our future Hackathons.

Organizing workflow

Whova, a mobile event app, was used to facilitate communication between organizers, volunteers, and event participants.

Each organizer developed a checklist of tasks, with due dates / times and requested # of volunteers for assistance.

The Hackathon Director use a master schedule / logistical overview chart to ensure each organizer completed their tasks.

7. FAQ

Who participated? Everyone! Students, clinicians, engineers, biz folks, & designers. We helped people find a team, but many participants came with a group of friends.

What perks did participants receive? We provided mentor office hours with dozens of expert clinicians, engineering faculty, and industry professionals. All attendees received a 10% discount for patent filings with IP SmartUp, and $30 of course credit with General Assembly, a software academy.

What did participants bring to the Hackathon? They brought sleeping bags, pillows, toiletries, and clothes. They did not need a team, any medical experience, or their own food or drink.

What did non-clinical participants do? On Friday night, we shared "pain points", or unmet clinical needs we found from clinicians. That night, participants networked, formed teams, and choose a problem to hack.

What did software hackers work with? Validic, Iron Yard, and Cirracore provided participants with APIs, tech support, and server resources, respectively.

What did hardware hackers work with? Emory's Department of Surgery and the EXCEL Lab at the School of Medicine generously donated IV gear, a breathing circuit for a ventilator, and electronic patient monitors. We also purchased space and staff supervision at Georgia Tech's Invention Studio - a hardware maker space within the School of Mechanical Engineering.

How does intellectual property & liability work? We provided an IP policy & liability form that stated Forge makes no claims to any IP, and that all participants must follow the IP rules from their home institutions or employers. Our team drafted this agreement in collaboration with the Offices of Technology Transfer at both Emory University and Georgia Tech.

Who attended the final pitches and keynote talks on Sunday? Our weekend "Demo Day" was free for everyone to attend. Every Hackathon participant, several mentors, our esteemed judges, and several stakeholders from the Atlanta startup community attended. We also invited conference participants from the South-Eastern Medical Scientist Symposium (SEMSS) - a regional MD/PhD conference - to attend demo day.

8. Agenda

Time	Activity	Location
Fri 8/22		
6:00-7:00 PM	Registration	Hodges Room, ATDC
6:00-7:00 PM	Networking	
7:00-8:00 PM	Welcome & pain point pitches	
8:00-9:45 PM	Team Formation	
9:45-10:00 PM	Closing remarks (and some exciting announcements)	
Sat 8/23		
8:00-9:00 AM	Breakfast	Hodges Room, ATDC
All day	Work @ ATDC	Conference Rooms, ATDC
All day	Office Hours	Hodges, Community, & Conference Rooms in ATDC
9:00 AM - 6:00 PM	Hardware hacking	Invention Studio @ GT
12:00-1:00 PM	Lunch	Hodges Room, ATDC
6:00-7:00 PM	Dinner	Hodges Room, ATDC
Sun 8/24 - DEMO DAY!		
7:00-8:00 AM	Breakfast	ATDC, 1st Floor Entry Area
7:30-8:30 AM	Registration for non-hackers	GT Conference Center
8:00-8:30 AM	Walk to GT Conference Center	
8:30-8:35 AM	Welcome & overview - Kevin Olsen	
8:35-8:40 AM	The vision of Forge - Erik Reinertsen	
8:40-8:50 AM	NeuroLaunch - Jordan Amadio, MD, MBA	
8:50-9:00 AM	I Corps South - James Stubbs, PhD	
9:00-11:00 AM	Final Pitches	
11:00-noon	Closing remarks - Nate Gross, MD, MBA Prizes - Cathy Vu	

Forge is an organization based in Atlanta, GA whose vision is to develop outstanding entrepreneurs working at the intersection of healthcare and technology. The Forge team creates a culture of entrepreneurship in healthcare by connecting and educating clinicians, engineers, and startup founders.

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