

Notable Women in Computing



TechWomen Alumnae Present: Emerging Leaders

from Africa & the Middle East Playing Cards





Crowd Funding the Notable Women in Computing Project on Kickstarter

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Let's start with 108 Role Models...

A role model is a person whose behavior, example, or success can be emulated by others.



February 2016

Notable Technical Women Project

http://www.notabletechnicalwomen.org https://www.facebook.com/NotableTechnicalWomen https://www.kickstarter.com/projects/jessidg/notable-women-in-computing-card-deck

- Women have been leaders in computing from the start, but not enough of our contributions are remembered. **Keep our history.**
- Professor Susan H. Rodger (Professor of the Practice, Duke University), Katy
 Dickinson (Founder, Mentoring Standard), and Katy's daughter Jessica Dickinson
 Goodman, collaborated to create the first deck and poster in 2014.
- The project goal is to present remarkable, successful, and diverse technical women as role models. We want girls and women to see a future for themselves in these cards.



February 2016

KICKSTARTER Success & Failure Stats

- There have been 280,664 Kickstarter projects launched with over \$2 Billion pledged.
- 99,838 projects were successfully funded.
- 175,484 projects were not successfully funded.
- What does failure mean?
 - Project is not funded:
 - 36% of projects are funded
 - 15% receive no pledges
 - 78% of projects that raise more than 20% of their goal were successfully funded
 - Projects that raise less than \$1,000 fail most often
 - 8% of dollars pledged went to failed projects
 - Project is funded but does not deliver the promised rewards to backers:
 - 9% failed to deliver at all
 - 7% of backers fail to receive their chosen reward
 - Failure rates are consistent across all categories
 - 65% of backers agree that the reward was delivered on time

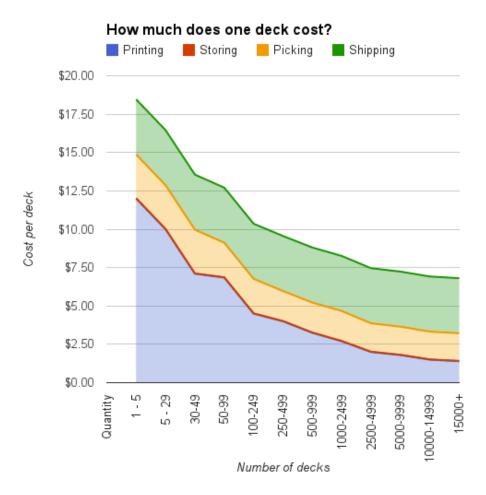
As of 3 Feb 2016, From: https://www.kickstarter.com/help/stats and https://www.kickstarter.com/fulfillment

Successful Crowd Funding of Notable Women in Computing

- "Notable Women in Computing Card Deck" Kickstarter ran October-November 2014, with fulfillment in December 2014.
- \$3,000 was originally requested, \$15,010 was pledged by 392 backers.
- During the Kickstarter funding period, Dr. Susan Rodger presented the "Notable Women in Computing" poster at the Grace Hopper Celebration of Women in Computing (GHC14). The original self-funded printing of 300 decks was available at the Duke University exhibit table – where they shortly sold out.
- The Kickstarter was announced from the podium at a GHC14 plenary session.
- The first card decks shipped to backers in December 2014. Since then over 5,000 have been distributed. The project is now publishing its third edition.
- The first sister project was the "TechWomen Emerging Leader from Africa and the Middle East" created by Katy and Jessica and sponsored by the TechWomen Alumnae Council. Other sister projects are in development.



Finances and Crowd Funding



Part of creating a Kickstarter is developing a clear financial picture of what the project will cost – including packaging, postage, storing, and handling / fulfillment.

Since October 2014, we have provided custom versions of the card decks for many conferences and company events, in addition to the general distribution.

Managing costs and inventory are an ongoing chore. Susan, Jessica, and Katy still meet by phone monthly.

Backer Communications

- Jessica provided 64 updates on the Kickstarter project page more were posted to Katysblog – to keep backers informed and entertained.
- Multiple web videos were posted to the Kickstarter campaign site including a Halloween Costume Contest, and stories showing shipping rewards to backers.
- Communications continue through the Facebook page and Duke University site.
- The content of the cards is improved over time giving new opportunities to communicate.
- In 2014, fourteen of the honorees had no Wikipedia biography page. That has been reduced to just four. New photos are added when found.



February 2016

Katy Dickinson & Jessica Dickinson Goodman

Why Kickstarter Projects Fail

Analysis of why projects fail, from Paul Roman Martinez who has run three successful Kickstarter campaigns (comics and tabletop games categories):

- 1. Poor Thumbnail Image
- 2. Poor Project Title and Subtitle
- 3. Unclear Description of the Product and the Goal
- 4. No Prior Fan Outreach
- 5. Not Explaining Why You are Qualified to Produce this Project
- 6. Not Enough Art on the Page
- 7. Not Enough Interaction with Backers
- 8. Not Treating Kickstarter like an Event
- 9. Confusing Pledge Levels
- 10. Missing or Poor Video
- 11. Confusing or Incomplete Shipping

From: http://www.bleedingcool.com/2014/03/23/11-things-all-failed-kickstarter-projects-do-wrong/

Another Kickstarter Success Example

Travel writer Christine Gilbert ran two successful crowd funding rounds for a film: one private round for \$10,000, and the other using Kickstarter, through which she raised \$37,406 in 2012:

- Why she succeeded with Kickstarter:
 - Serious research and audience testing full time for 30 days before launch
 - Told a good story asked backers to "fund the idea"
 - Contacted more than 600 backers individually during campaign period
 - Funded from:
 - 20% Kickstarter community
 - 40% her blog audience (people who know her work)
 - 40% personal network (friends, family, colleagues who know her)
 - Average contribution was over \$50/each
- What she did wrong:
 - Structure of rewards was not in her control (tied to a film festival tour)
 - Delay in rewards distribution of a year

From: http://www.tnooz.com/article/kickstarter-top-travel-blogger-wishes-known/

About the Content and Honorees

- The 2014 Kickstarter campaign was based on a mature project that had been in development since 2009, run by three well-known professionals who actively engaged their networks to support the crowd funding.
- Every one of the living honorees was contacted and approved her inclusion. Many honorees actively backed and promoted the project.
- Pictures and information are from Wikipedia or from the honorees.
- The project is licensed under *Creative Commons Attribution-NonCommercial-ShareAlike 3.0 U.S. License*.
- Every deck or poster paid for contributes to sending a deck to an educator who cannot afford one. The founders make no profit.



FAMOUS WOMEN IN COMPUTING 1840s 1890s nrietta Swan Leavitt Program Instrumental in discovery of the abeid variable stars, evidence 1920s for the expan Grete Hermann 1940s foundational pape Kay McNulty, Betty zed alor Snyder, Marlyn Wescof **Ruth Lichtern** an, Betty Jennings and Fran Bilas 1950s Katherine Johnson Calculated trajectories and launch windows for 1960s key NASA missions Grace Honnes Norking on Univac and compiler-based programs languages including COBOL 1970s Erna Schneider Hoover Created a computerized switching system for telephone call traffic and Lynn Conway Co-wrote the book on arned one of the first VLSI which lead to today's illions of gates and billion **B** First woman to earn a PhD in 1980s Radia Perlm outer science from MIT BM Fellow who has pioneered Invented Spanning Tre Protocol (STP) enabling the ellaborative technologies eation of the Interne Adele Goldberg pioneer of graphically based user interfaces. Anita Borg Founded Systers community fo tor sciontists and co-founded the Grace Hopper X elebration of Women in Frances Allen First woman to receive ACM's 225° A.M. Turing Award and a pioneer in the field of 2000s zing compilers Deborah Estrin lioneer in the field of embedded Pioneer in the field of embedded network sensing (a key component in the emerging area of the internet of things). ANITA BORG INSTITUTE rently Professor of Compute at Cornell NYC Tech

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History of a List

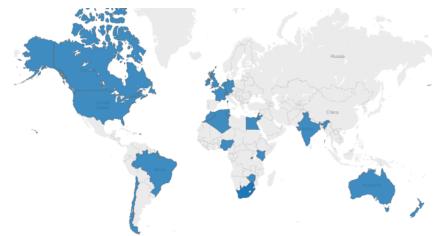
- "Award-Winning Career Timelines in Computer Science and Engineering" web resource profiling **6** remarkable contributors, created by the Anita Borg Institute Advisory Board 2008-2010 and presented at the Grace Hopper Conference in 2009 & 2010
- "Famous Women in Computer Science" web resource created by the Anita Borg Institute Advisory Board 2009-2012 (the first list presented **18** names – based on list from Univ. of Bristol in the UK)
- August 2013 Dr. Susan Rodger (CRA-W) and Katy Dickinson (ABI) combined their projects for a new total of 234 names of remarkable technical women
 - "Famous Women in Computing" timeline card with **19** names was distributed at the 2014 and 2015 Women of Vision galas by the Anita Borg Institute
 - The current list with **347** names is hosted on the Duke Univ. Site: *http://www.cs.duke.edu/csed/wikipedia/*

Selection & Distribution

• Selection:

Women in the Notable Technical Women deck received multiple, high-level awards from more than one institution. This deck seeks to portray the true diversity of women in computing both current and historical, showcasing technical leaders from a variety of nations, backgrounds, gender identities, orientations and abilities.

- Distribution:
 - 1st at Grace Hopper Conference (GHC14) as a research poster
 - 2nd through Kickstarter (raised 5x initial requested funding)
 - Now through notabletechnicalwomen.org



All profits go to sending cards and posters to educators around the world. Over 5,000 decks have been distributed.

<- 25+ countries where the decks have gone (that we know of!)

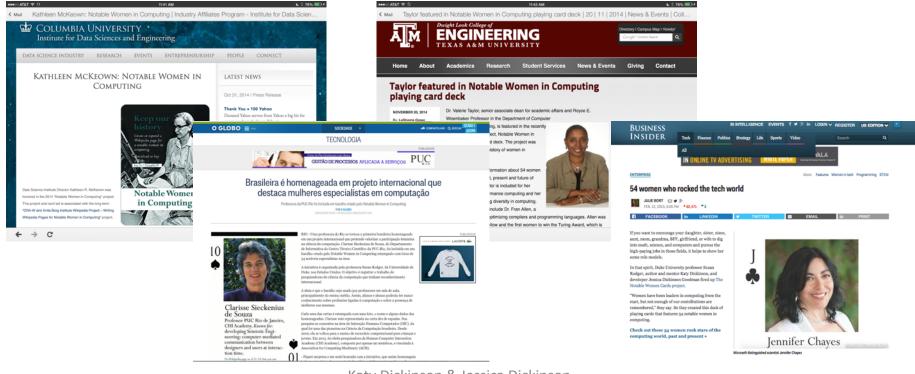
Many Ways to Measure

- The project team gets many requests for special sorting of honorees.
- For example, the US Patent and Trademark Office staff at the May 2015 Maker Faire asked for this (incomplete) list of notable patent holders among the 54 honorees. USPTO was distributing their own deck.
 - Chieko Asakawa (King of Spades) at least 18
 - Jennifer Chayes (Jack of Clubs) at least 15
 - Yuqing Gao (Jack of Diamonds) at least 32
 - Vicki Hanson (Ace of Clubs) at least 9
 - Mary Lou Jepsen (5 of Clubs) at least 14
 - Kristina Johnson (4 of Clubs) at least 42
 - Duy-Loan Le (8 of Hearts) at least 23
 - Barbara Liskov (King of Hearts) at least 15
 - Radia Perlman (Ace of Spades) at least 200
 - Sophie Vandebroek (7 of Diamonds) at least 14
 - Sophie Wilson (3 of Clubs) at least 35



Professional Benefits to Honorees

- Since publication in October 2014, the project has been featured in global news about the decks and honorees.
- Honorees often list the deck on their resumes and websites.



Technical Pioneers Since 1843



Augusta Ada Lovelace King Mathematician. Known for: being the 1st computer programmer in 1843.

http://en.wikipedia.org/wiki/Ada_Lovelace



Grete Hermann Univ. of Göttingen mathematician. Known for: 1926 foundational paper for computerized algebra.

http://en.wikipedia.org/wiki/Grete_Herm "Grete Hermann" by [1]. Licensed under fair Use in the or licensen via Willington Jones 7 day to 72 holfs

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Katherine Johnson NASA Mathematician. Known for: calculating the trajectory of early space launches.





Grace Hopper US Navy Admiral, Distinguished Fellow of the British Computer Society, Computer History Museum Fellow, Known for: inventing the 1st compiler, popularizing term "debugging" for fixing code. http://en.wikipedia.org/wiki/Grace_Hopper "Grave Hopper and UNTINC" by Snithensian - Ficke, Licenced and Antolexino 2.0 situ Wikinedia Commons - http://bit/y1stfC2i





Betty Snyder ENIAC computer programmer team 1946, WITI Hall of Fame. Known for: being a pioneer in programing the first electronic general-purpose computer.

No Wikipedia page as of 11/14, but you can change that. Learn more here: bit.ly/NotableW *Eniac* - U.S.Army Photo, Licensed under Public Domain via Wilar Commons - http://bit.bc/lrjaDMF



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Jean Bartik ENIAC computer programmer team 1946, WITI Hall of Fame. Known for: being a pioneer in programing the first electronic general-purpose computer.

http://en.wikipedia.org/wiki/Jean_Bartik "Two-women operating INIAC" by U.S.Army - Image from [2], Licensed under Public Domain via/Wikimedia Commons - http://liki.ls/lytL0OL



Ruth Lichterman Teitelbaum ENIAC computer program-mer team 1946, WITI Hall Fame. Known for: being a pioneer in programing the first electronic general-pur pose computer.

http://en.wikipedia.org/wiki/Ruth_Teitelb "Cropped photo of decused computer scientist, Bath from Dackducknop, Licensed under Neutice Commo Commons - Mittge://doi.lo/1101-0170



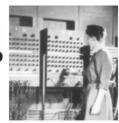
ENIAC computer programmer team 1946, WITI Hall of Fame. Known for: being a pioneer in programing the first electronic general-purpose computer.

wikipedia.org/wiki/Kathleen Ante Nalty maturitai fotografie" - High school graduation portra I under Public Domain via Wikimedia Commoni -



arlyn Wescoff IAC computer program-r team 1946, WITI Hall of ne. Known for: being a neer in programing the t electronic general-pure computer.

/en.wikipedia.org/wiki/Marlyn_Meltz



Fran Bilas ENIAC computer programmer team 1946, WITI Hall of Fame. Known for: being a pioneer in programing the first electronic general-purpose computer.

http://en.wikipedia.org/wiki/Frances_Spence



"Two women operating ENIAC" by U.S.Army - Image from [2], Licensed under Public Domain via/Wikimofia Commons - http://bit.by/TytL9OL

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Government Technology Leaders



Arati Prabhakar US DARPA Director, IEEE Fellow, Head National Institute of Standards and Technology. Known for: promoting economic growth by developing manufacturing tech for semiconductor devices.

http://en.wikipedia.org/wiki/Arati_Prabhakar

8



Ellen Ochoa NASA Astronaut and Johnson Space Center Director, NASA Distinguished Service Medal, San Diego State University Alumna of the Year. Known for: being a computer scientist and 1st Hispanic woman in space. http://en.wikipedia.org/wiki/Ellen_Ochoa 'Elen Ochoa' by NSSA - sparlight area.gos. Lierenel under Public Donain villelinedia Common - http://lib.dr/167144 01



Kristina Johnson Undersecretary US Dept. of Energy, IEEE Fellow, ABI Women of Vision, SWE Achievement Award. Known for: contributions to optoelectronic processing systems and liquid crystal devices.

http://en.wikipedia.org/wiki/Kristina_M._Johnson

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Hessa Sultan Al Jaber Qatar ICT Minister, Chair CS Department - Qatar Univ. Known for: leadership in Qatar engineering, academics, and politics https://en.wikipedia.org/wiki/Hessa_Al_Jaber

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Entrepreneurs and Innovators



Lila Ibrahim Chief Business Officer Coursera, Purdue Univ.-Outstanding Electrical and Computer Engineer. Known for: leadership in offering free online courses, as a venture capitalist, social entrepreneur.

No Wikipedia page as of 11/14, but you can change that. Learn more here: bit.ly/NotableW



Helen Greiner CEO of CyPhy Works, ABI Women of Vision, WITI Hall of Fame. *Known for*: robotics entrepreneurship, developing robots like the iRobot Roomba for consumer and military markets.

http://en.wikipedia.org/wiki/Helen_Greiner

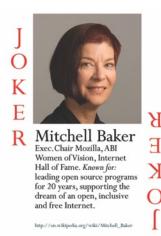


Mary Lou Jepsen Google X Head of the Display Division, ABI Women of Vision, WITI Hall of Fame. Known for: being a remarkable innovator-entrepreneur and creating the One Laptop Per Child technology. bipt/cns.wiegko.org/wiki/Mar_Jon_Jepsen There was the 2000 the Mark Linear Sector Sector



Anita Borg Founder Anita Borg Institute and Grace Hopper Celebration of Women in Computing, WITI Hall of Fame, ACM Fellow, EFF Pioneer. Known for: contributions to fault tolerant computing and support of women in computing.

http://en.wikipedia.org/wiki/Anita_Borg





Qiheng Hu Founder, China Internet Network Information Center, Internet Hall of Fame, Research Professor - Chinese Academy of Sciences. *Known for*: leading the project team that brough the Internet to mainland China. New Wikpedia page and 11/14, but you can demge dut. Leam more here: http://watable/W



Chieko Asakawa IBM Fellow, ABI Women of Vision, Japan Medal of Honor with Purple Ribbon. *Known* for: accessibility research and development, and for leadership in the visually impaired technical community.

No Wikipedia page as of 11/14, but you can change that. Learn more here: bit.ly/NotableW



Sophie Wilson Designer Acorn Microcomputer, Broadcom Director IC Design, Computer History Museum Fellow, Fellow of the Royal Society. *Known for:* computer hardware design and for leadership in the transgender technical community.

February 2016

Katy Dickinson & Jessica Dickinson Goodman 8

Remarkable Leaders



Maria Klawe Harvey Mudd College President, Canadian Information Processing Society founding Fellow, ACM Fellow, Known for: technical, educational and disciplinary leadership; rapidly increasing the participation of women in computing. http://wwikipedkarg/wiki/Mutia,Riwe





Denice Denton UC Santa Cruz Chancellor, AAAS Fellow, IEEE Fellow *Known for*: leadership in engineering education, advocacyfor women in science and technology, being the first openly gay UC Chancellor.

http://en.wikipedia.org/wiki/Denice_Denton



Genevieve Bell Intel Director of Interaction and Experience Research, ABI Women of Vision, WITI Hall of Fame. *Known for:* combining anthropology and technology to explore social and cultural aspects of ubiquitous computing. http://en.wikipedia.org/wiki/Genesieve_Bell



Cristina Amon Univ. of Toronto Dean-Faculty of Applied Science & Engineering, IEEE Fellow, Spanish Royal Academy. *Known for:* contributions to thermal management techniques for wearable computers and portable electronics.



Sophie Vandebroek CTO Xerox, IEEE Fellow, WITI Hall of Fame, Royal Flemish Academy for Arts & Sciences Member. Known for: leadership in developing document systems.





Jennifer Chayes Microsoft Research Distinguished Scientist, ACM Fellow, ABI Women of Vision. *Known for:* contributions to the foundations of dynamic random networks.

http://en.wikipedia.org/wiki/Jennifer_Tour_Chayes

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Highly Honored Experts



Radia Perlman ACM SIGCOMM and Usenix Association Awards, Internet Hall of Fame, 1st ABI Women of Vision Innovation Award. *Known for:* contributions to network routing and security protocols.

http://en.wikipedia.org/wiki/Radia_Perlman

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Shafrira Goldwasser Turing Award, Professor at MIT and Weizmann Institute of Science, ACM-W Athena Lecturer. *Known for*: foundational work in cryptography.



Barbara Liskov MIT Professor, Turing Award, ACM Fellow, SWE Achievement Award. *Known for:* contributions to programming language and system design.

http://en.wikipedia.org/wiki/Barbara_Liskov Tarbar Jakas MIT mongator scients 2010" by Konsch C. Zahel. Journel ander CP. Handrons Nare Jake 3.0 via Wikimedia Commons App/10.3/1409 Mg



Betsy Ancker-Johnson Fellow AAAS, IEEE Fellow, Member NAE, Fellow Am Physical Soc. *Known for*: 1st observation of microwave emission without the presence of an external field (1967).

http://en.wikipedia.org/wiki/Betsy_Ancker-Johnson

6

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Jean Sammet IBM Researcher, 1st woman ACM President, ACM Fellow, Computer History Museum Fellow, *Known for*: advancing the art and science of computer programing languages.

http://en.wikipedia.org/wiki/Jean_E._Sammet



Irene Greif IBM User Experience Group, ACM Fellow, AAAS Fellow, formed Lotus Research 1992. *Known for*: pioneering the field of Computer Supported Cooperative Work.



Frances Allen IBM Fellow Emerita, Turing Award, Computer History Museum Fellow, IEEE Fellow. *Known for:* contributions to programming language compilers.





Duy-Loan Le Senior Fellow-Texas Instruments, Golden Torch Award for Exemplary Citizenship in the Vietnamese American community. *Known for*: contributions to Digital Signal Processor microelectronics tech, and as 1st woman and 1st Asian TI Senior Fellow. http://re.wikipeda.org/wiki/Low_Loan

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Researchers & Academic Stars





Kathleen McKeown Professor Columbia Univ., ACM and AAAI Fellow, Founding Fellow Association for Computational Linguistics. Known for: contributions to natural language processing. No Wikipedia page as of 11/14, but you can change that. Learn more here: bit.ly/NotableW



Clarisse Sieckenius de Souza Professor PUC Rio de Janeiro, CHI Academy. Known for: developing Semiotic Engineering: computer-mediated communication between designers and users at interaction time. 01 No Wikipedia page as of 11/14, but you can change that. Learn more here: bit.ly/NotableW

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RIT Distinguished Professor, Professor Univ. of Dundee, ACM Fellow, SIGCHI Social Impact Award, ABI Women of Vision, Fellow Royal Society of Edinburgh. Known for: contributions to computing tech for people with disabilities. http://en.wikipedia.org/wiki/Vicki_L._Hanson



Ruzena Bajcsy UC Berkeley Professor, NAE Member, ACM Fellow, IEEE Fellow, AAAI member, AAAS member. Known for: contributions in robotic and intelligent

9



Laurie Hendren Professor McGill Univ., ACM Fellow, Fellow of the Royal Society of Canada. Known for: contributions to programming languages.

No Wikipedia page as of 11/14, but you can change that. Learn more here: bit.ly/NotableW



Linda Petzold Professor UC Santa Barbara, ACM Fellow, AAAS Fellow, NAE Member. Known for: contributions to computational science.

No Wikipedia page as of 11/14, but you can change that. Learn more here: bit.ly/NotableW

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20

6

More Researchers & Academic Stars



http://en.wikipedia.org/wiki/Manuela_M._Veloso



Mary Jane Irwin Pennsylvania State Univ. Professor, ACM Fellow, IEEE Fellow, ACM-W Athena Lecturer. Known for: contributions in computer arithmetic and digital signal processing architectures.

Yuqing Gao IBM Senior Manager, ABI Women of Vision, IEEE Fellow. Known for: contributions to speech recognition and speech-to-speech translation.

No Wikipedia page as of 11/14, but you can change that. Learn more here: bit.ly/NotableW

Susan Landau

Professor at Worcester Poly-

technic Institute, ACM Fellow,

AAAS Fellow, ABI Women of

policy leadership in security

http://en.wikipedia.org/wiki/Susan_Landau

9

Vision, Known for: public

and privacy.



Anuradha Annaswamy MIT Senior Research Scientist, IEEE Fellow, Hay Medal, Indian Institute of Science. Known for: contributions to adaptive control theory and neural networks. No Wikipedia page as of 11/14, but you can change that. Learn more here: bit.ly/NotableW





Deborah Estrin Professor Cornell NYC Tech, ACM, AAAS and IEEE Fellow, ABI Women of Vision, ACM-W Athena Lecturer. Known for: contributions to Internet protocols.

http://en.wikipedia.org/wiki/Deborah_Estrin

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February 2016

Katy Dickinson & Jessica Dickinson Goodman

21

About the Presenters

Katy Dickinson is the Founder of Mentoring Standard. She has designed and managed successful mentoring programs in the Americas, Africa, the Middle East, Europe, and Asia. She was the Process Architect for the first class of the U.S. State Department's TechWomen mentoring program, a Member of the Anita Borg Institute Advisory Board, and a Lecturer for the University of California at Berkeley Engineering class on entrepreneurship for many years. Follow Katy's blog on *Katysblog.wordpress.com* More on Mentoring Standard*: mentoringstandard.com*



Jessica Dickinson Goodman was a 5th Year Scholar at Carnegie Mellon University with a major in Ethics, History and Public Policy, a minor in Opera, and three years of Arabic. After college, she interned at Harvard Law School's Berkman Center for Internet and Society, then went to Washington, DC to run online communications for an anti-human trafficking nonprofit where she helped raise \$500,000 a year online. She now works for the California Department of Justice. Follow Jessica's blog on *jessicadickinsongoodman.com*