

SCOTT DAVIDOFF

PHD

POST DOCTORAL FELLOW + LECTURER
CARNEGIE MELLON UNIVERSITY
HUMAN-COMPUTER INTERACTION INSTITUTE

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AREAS OF EXPERTISE

14 years in research and advanced development

1. APPLICATIONS OF MACHINE LEARNING to novel real world and online situations
2. COMPUTATIONAL SOCIAL SCIENCE to capture and mine massive data sets
3. VISUALIZATION to enable novice and scientific end-users to interpret data
4. EXPERIENCE DESIGN to uncover how functional needs interact with social roles

EDUCATION SUMMARY

2011	Ph.D. Human-Computer Interaction	Carnegie Mellon
2009	M.S. Computer Science	Carnegie Mellon
2004	M.HCI Human-Computer Interaction	Carnegie Mellon
1993	B.A. Political Theory + Literature	Duke University

EMPLOYMENT SUMMARY

	Research	
2011 – PRESENT	Carnegie Mellon	Post Doctoral Fellow + Lecturer
2008 – 2009	Microsoft Research, Cambridge	Research Intern
2004 – 2011	Carnegie Mellon	Graduate Research Assistant
	Advanced Development	
1999 – 2003	Scott Davidoff Design	Principal Designer
1999	Hi-D Design	Design Lead
1998	Hi-D Design	Interaction Designer

AWARDS

2009	\$500,000 Grant	NSF HCC
2008	\$80,000 Grant	Google Research Grant
2007	Best Presentation Runner Up	ACM Ubicomp
2006	Best Paper	Design + Emotion

EMPLOYMENT | RESEARCH

2011 – PRESENT

CARNEGIE MELLON
POST DOCTORAL FELLOW, LECTURER

- Develop machine learning algorithms for mobile phone applications
- Mine large data sets to find and interpret patterns and anomalies
- Develop simulated environments for mobile UX evaluation
- Manage teams of designers, developers + researchers to implement UIs for novel services

Findings

BIG DATA Mobile phones can learn family temporal constraints + schedule
BIG DATA Anomalous mobile phone use predicts changes to family plans

2004 – 2011

CARNEGIE MELLON
GRADUATE RESEARCH ASSISTANT

- Invent user research methods to overcome novel problems in mobile space (now part of CMU design and HCI curriculums)
- Adapt existing research and design methods to novel problem situations in mobile space
- Explore large data sets to identify and interpret statistical patterns
- Translate insights from data into opportunities to create new services
- Invent novel domestic consumer technologies that leverage novel applications of machine learning and data mining
- Create novel visualizations to display complex data insights
- Conduct 3 years of field research on busy American families
- Over 8 years, recruit and manage 25 teams of 3-10 people to conduct field research, implement designs and evaluate systems in lab and field

Findings

BIG DATA Transportation for 80% of kids' activities planned multiple times
BIG DATA Over 90% of activities written on calendar are non-routine
BIG DATA Mobile phone GPS models predict kids' activity drivers at 88%
VIZ Time-Flow helps families see their logistical plans in new way
UI Developed prototype 'smart bag' to help kids learn responsibility
UI Created walk-up-and-use tangible email system for seniors
DESIGN Introduced method 'Speed Dating' to explore large idea spaces

2008 – 2009

MICROSOFT RESEARCH
RESEARCH INTERN

- Develop novel applications for domestic robotics
- Create novel prototyping techniques to overcome long robotic prototyping cycle

EMPLOYMENT | ADVANCED DEVELOPMENT

1999 – 2003	SCOTT DAVIDOFF DESIGN PRINCIPAL DESIGNER	<ul style="list-style-type: none">• Grow + manage advanced development teams behind 8 new products• Define tasks for and manage implementation of field research plans• Translate customer needs from fieldwork into operational insights• Manage teams of 3-10 interaction designers to define product features• Direct iterative design, prototype development and evaluation• Author proposal documents for RFPs to define high-level value proposition
	AOL, AMERICAN GREETINGS	Design and produce internal social networking application
	CITY UNIVERSITY OF NEW YORK	Design teacher lesson authoring environment for experimental school for at-risk teens
	SALOMON SMITH BARNEY	Design strategy and author specification for CRM system
	CANCER RESEARCH CENTER	Architect prototype donor extranet and remote collaboration intranet
	ABOUTVOICE	Design and produce prototype voice-based web navigation prototype for native Cantonese
1999	HI-D DESIGN DESIGN LEAD	<ul style="list-style-type: none">• Conduct contextual field research for business and consumer products• Translate customer needs into product competitive advantages• Lead teams of 3-5 designers to define product features• Author functional specification for technical implementation teams
	CONCUR TECHNOLOGIES	Observe accountants and define system to automate T&E expense configuration
	TV GUIDE	Create prototype system to help parents monitor their children's TV consumption
1998	HI-D DESIGN INTERACTION DESIGNER	<ul style="list-style-type: none">• Collaborate with field researchers to extract key competitive insights• Define product functional capabilities, authored screen-level wireframes iteratively program and evaluate UI prototype
	SBC AMERITECH	Define features, develop and iterate UI for first mass market IP telephony product

PUBLICATIONS | BOOK CHAPTERS

- [B.01] Lee, M.K., Davidoff, S., Zimmerman, J., & Dey, A.K. (2008). Designing for control: Finding roles for smart homes. In P. Desmet, J. van Erp, and M. Karlsson (Eds.), *Design & Emotion Moves* (pp. 246-266). Cambridge, UK: Cambridge Scholars Publishing.

PUBLICATIONS | JOURNAL PAPERS

- [J.02] Davidoff, S., Zimmerman, J. & Dey, A.K. (in submission). How much data is needed to machine learn family routines? In submission to *ACM Transactions on Computer-Human Interaction*.
- [J.01] Davidoff, S. (2011). Routine as resource for the design of learning systems. *Journal of Ambient Intelligence and Smart Environments*, 3(4): 371-372.

PUBLICATIONS | FULL CONFERENCE PAPERS

- [C.11] Davidoff, S., & Dey, A.K. (in preparation) Predicting family coordination outcomes using mobile phone call data. In preparation for the 2012 ACM Conference on Ubiquitous Computing (UbiComp 2012).
- [C.10] Ziebart, B.D. Davidoff, S., & Dey, A.K. (in preparation). Modeling changes to family logistical plans. In preparation for the 2012 ACM Conference on Ubiquitous Computing (UbiComp 2012).
- [C.09] Odom, W., Davidoff, S., Forlizzi, J. & Zimmerman, J. (in submission). A Fieldwork of the future with User Enactments. In submission to the 2012 ACM Conference on Designing Interactive Systems (DIS 2012).
- [C.08] Davidoff, S., Dey, A.K. & Zimmerman, J. (in submission). Adding person and place to family calendars. In submission to the 2012 ACM Conference on Designing Interactive Systems (DIS 2012).
- [C.07] Davidoff, S., Ziebart, B., Zimmerman, J. & Dey, A.K. (2011). Learning patterns of pick-ups and drop-offs to support busy family coordination. In *Proceedings of the 2011 ACM Conference on Human Factors in Computing Systems (CHI 2011)*, 1175-1184.
- [C.06] Davidoff, S., Zimmerman, J. & Dey, A. K. (2010). How routine learners can support family coordination. In *Proceedings of the 2010 ACM Conference on Human Factors in Computing Systems (CHI 2010)*, 2461-2470.
- 🏆 BEST PRESENTATION RUNNER-UP
- [C.05] Davidoff, S., Lee, M. K., Dey, A. K. & Zimmerman, J. (2007). Rapidly exploring application design through speed dating. In *Proceedings of the 2007 ACM Conference on Ubiquitous Computing (UbiComp 2007)*, 429-446.

- [C.04] Lee, M. K., Davidoff, S., Zimmerman, J., and Dey, A. K. (2007). Smart bag: Managing home and raising children. In Proceedings of the 2007 ACM Conference on Designing Pleasurable Products and Interfaces (DPPI 2007), 434-437.
- [C.03] Davidoff, S., Lee, M. K., Yiu, C. M., Zimmerman, J. & Dey, A. K. (2006). Principles of Smart Home Control. In Proceedings of the 2006 ACM Conference on Ubiquitous Computing (UbiComp 2006), 19-34.
- ✂ BEST PAPER WINNER
- [C.02] Lee, M.K., Davidoff, S., Zimmerman, J. & Dey, A.K. (2006). Smart homes, families and control, In Proceedings of 2006 Conference of the Design & Emotion Society (D&E 2006).
- [C.01] Davidoff, S., Lee, M. K., Dey, A. K., and Zimmerman, J. (2006). Socially-aware requirements for a smart home. In Proceedings of the 2006 IEEE Conference on Intelligent Environments (IE 2006), 45-48.

PUBLICATIONS | SHORT PAPERS

- [S.06] Davidoff, S., Taylor, A.S., Villar, N. & Izadi, S. (2011). Mechanical hijacking: How robots can accelerate ubicomp deployments. in *Proceedings of 2011 ACM Conference on Ubiquitous Computing (UbiComp 2011)*. 267-270
- [S.05] Davidoff, S. (2010). Routine as resource for the design of learning systems. In *Adjunct Proceedings of the 2010 ACM Conference on Ubiquitous Computing (UbiComp 2010)*, 457-460.
- [S.04] Davidoff, S. (2010). Finding appropriate roles for AI in the home: Experiences learning dual-income family routines. In *Proceedings of the Group 2010 Workshop on Connecting families: New technologies, family communication, and the impact on domestic space*.
- [S.03] Davidoff, S., Lee, M.K., Zimmerman, J. & Dey, A.K. (2006) Nurturing families by augmenting life control. In *Proceedings of UbiComp 2006 Workshop on Nurturing Technologies in the Domestic Environment*.
- [S.02] Davidoff, S., Carter, S., and Mankoff, J. (2005) Can early-stage tools and techniques for iterative design help researchers understand a problem space? In *Proceedings of the 2005 IEEE Conference on Pervasive Computing Workshop on Application-Led Research in Ubiquitous Computing*, 11-14
- [S.01] Davidoff, S., Bloomberg, C., Li, I.A.R., Fussell, S. R. & Mankoff, J. (2005). The book as user interface: lowering the entry cost to email for elders. In *Adjunct proceedings of the 2005 ACM Conference on Human Factors in Computing Systems (CHI 2005)*, 1331-1334.

PUBLICATIONS | INDUSTRY

- [I.05] Dangelmaier, H. & Davidoff, S. (2002). Invited Introduction: Making profits. What the prophets didn't tell us. In B. Martin Pederson (Ed.) *Graphis Interactive Design 2* (pp. 8-9). New York: Graphis Press.
- [I.04] Dangelmaier, H. & Davidoff, S. (2001). Judgment day, *Graphis*, 334: 9.
- [I.03] Dangelmaier, H. & Davidoff, S. (2001). Design's role in business success. In: Technology and marketing features, <http://office.com>, A. Neusner (Ed.), April 25, 2001.
- [I.02] Dangelmaier, H. & Davidoff, S. (2001) Why most B2B websites are marketing liabilities. In: Technology and marketing features, <http://office.com>, A. Neusner (Ed.), Feb. 15, 2001.
- [I.01] Dangelmaier, H. & Davidoff, S. (2000). The Deceptive service offerings of enterprise web agencies: Quality creative work comes from individual excellence, not a corporate process document. In: Technology and marketing features, <http://office.com>, A. Neusner (Ed.), Sept. 21, 2000.

GRANTS AWARDED

- 2010 NATIONAL SCIENCE FOUNDATION, HCC, IIS
Co-Author, \$500,000 Grant: Learning routines to support people's activities
- 2009 GOOGLE
Co-Author, \$80,000 Google research award

TEACHING

- SUMMER 2011 DESIGNING HUMAN CENTERED SERVICES
Co-Instructor with Jason Hong & Jim Morris
- SUMMER 2007 FROM SMART HOUSE TO SMART HOME
Co-Designer with Anind Dey & John Zimmerman
Teaching Assistant for Anind Dey & John Zimmerman
- SPRING 2007 INTERFACE AND INTERACTION DESIGN
Teaching Assistant for John Zimmerman
- SPRING 2007 INTERFACE AND INTERACTION DESIGN
Teaching Assistant for Pamela Jennings

SERVICE | COMMITTEES

2009 CHI Work-in-progress committee member
TEI Program committee member

SERVICE | CONFERENCE REVIEWING

2012 CHI, Pervasive, CSCW, TEI
2011 CHI, Ubicomp, Pervasive
2010 CHI, Ubicomp, Pervasive, IROS, CSCW, DIS, TEI
2009 CHI, Ubicomp, Pervasive, IROS, ICRA, TEI
2008 CHI, Ubicomp, ICRA, CSCW, DIS
2007 CHI, Ubicomp, DUX
2006 CHI, CSCW
2005 CHI, DUX

SERVICE | JOURNAL REVIEWING

2012 ACM Transactions on Intelligent Information Systems
Journal of Ambient Intelligence and Smart Environments
2011 ACM Transactions on Intelligent Information Systems
IEEE Transactions on Systems, Man & Cybernetics
Journal of Ambient Intelligence and Smart Environments
2010 IEEE Transactions on Systems, Man & Cybernetics
Journal of Ambient Intelligence and Smart Environments

RESEARCH PROJECTS SUPERVISED

	MOBILE PHONE INTERACTION WITH FAMILY PLAN DATA Aderinsola Akintilo, Adewale Desalu	BIS, BSEE
2011	INTERVIEW STUDY OF FAMILY ROUTINE VISUALIZATIONS Zhe Han Neo, Hyori Park	M.DES, M.IS
	STATISTICAL PATTERN RECOGNITION IN FAMILY GPS DATA STREAMS Andrew Lee	BS
	EXPERIENCE PROTOTYPING FAMILY ROUTINE VISUALIZATIONS Hyori Park	M.DES
2010	AMBIGUITY IN FAMILY ROUTINE VISUALIZATIONS Hyori Park	M.DES
	VISUALIZING LEARNED FAMILY ROUTINES Hyori Park	M.DES
2009	VISUALIZING SPATIAL TIME-SERIES DATA Juliana Diaz	M.DES
2008	DESIGN OF MOBILE REMINDER SYSTEMS Melissa Acosta	B.DES
	AUTOMATIC PLACE EXTRACTION FROM GPS TRACES Peter Pong	BS
	FAMILY ORGANIZATION SYSTEMS Melissa Acosta, Frank Chen	B.DES, BS
	DATA COLLECTION FOR FAMILY ROUTINES STUDY Melissa Acosta, Frank Chen, Korina Loumidi, Avery Yang	B.DES, BS, M.HCI
2007	PROTOTYPING LOCATION-BASED SERVICES FOR MOBILE DEVICES Gabriel Huh	BS
	PILOT DATA COLLECTION FOR FAMILY ROUTINES STUDY Melissa Acosta, Christine Chang, Ilkyoo Choi, Jerry Feng Bonnie Lee, Daniel Rhim, Gyung Chan Seol	B.DES, B.S., M.HCI
	DESIGN OF APPLICATIONS TO MONITOR CHILDREN'S HEALTH Lalatendu Satpathy	M.HCI
	DESIGN OF APPLICATIONS TO CONNECT PARENTS AND CHILDREN Nina Shih	M.HCI
	FIELDWORK ON FAMILY CALENDARS AND REMINDER SYSTEMS	

Bryan Crowe, Eun Hyung Kim, Ben Koh, Min Kyung Lee
K.C. Oh, Ray Su M.Des, M.HCI

2006 DESIGN OF A SMART BAG THAT KNOWS ITS CONTENTS
Min Kyung Lee M.DES

2005 FIELD STUDY OF FAMILY ORGANIZATIONAL SYSTEMS
Min Kyung Lee M.DES

REFERENCES

ANIND K. DEY
Carnegie Mellon University Associate Professor

JOHN ZIMMERMAN
Carnegie Mellon University Associate Professor

GREGORY D. ABOWD
Georgia Institute of Technology Distinguished Professor