

## Martin K.-C. Yeh

Assistant Professor  
College of Information Sciences and Technology  
Penn State University - Brandywine  
207H Tomezsko Building  
25 Yearsley Mill Rd  
Media, PA 19063  
+1 (610) 862-1351  
martin.yeh@psu.edu <http://martinyeh.com>

## Research

### Publications

- Ritter, F. E., **Yeh, M. K.-C.**, Yan, Y., Siu, K.-C., & Oleynikov, D. (2020) Effects of varied surgical simulation training schedules on motor-skill acquisition. *Surgical Innovation*, 27(1), 68 – 80.
- Wang, N., Gregg, A., **Yeh, M. K.-C.**, Heiser, R. & Diehl, W. (2019) Pet avatars, performance visualization, and social presence. *International Journal of Technology in Teaching and Learning*, 15(1), 18 – 31.
- Lewis, R., Mello, C. A., Zhuang, Y, **Yeh, M. K.-C.**, Yan, Y., & Gopstein, D. (2018) Rough sets: Visually discerning neurological functionality during thought processes. *International Symposium on Methodologies for Intelligent Systems*. Limassol, Cyprus.
- Yeh, M. K.-C.** (2018). Examining novice programmers' software design strategies through verbal protocol analysis. *International Journal of Engineering Education*. 34(2).
- Yeh, M. K.-C.**, Yan, Y., Gopstein, D., & Zhuang, Y. (2017). Detecting and Comparing brain activity in short program comprehension using EEG. In *Frontiers in Education (FIE) Conference, 2017 IEEE*. Indianapolis, IN, USA: IEEE.
- Gopstein, D., Iannacone, J., Yan, Y., DeLong, L. A., Zhuang, Y., **Yeh, M. K.-C.**, & Cappos, J. (2017). Understanding misunderstandings in source code. In *Proceedings of the 2017 11th Joint Meeting on Foundations of Software Engineering*. Paderborn, Germany: ACM.  
[Distinguished Paper Award]
- Yeh, M. K.-C.**, Toshtzar, A., Guertin, L., & Yan, Y. (2016). Using spaced repetition and gamification to enhance K-12 student science literacy with on-demand mobile short reads. In *Frontiers in Education (FIE) Conference, 2016 IEEE* (pp. 1-4). Erie, PA, USA: IEEE.
- Shaffer, S., **Yeh, M. K.-C.**, & Iwinski, T. (2015). Designing the Ideal Assessment System to Support Mastery Learning of Computer Programming in an Online Environment. *American Society for Engineering Education Spring 2015 Middle Atlantic Section* (pp. 148–160). PA: ASEE.

- Cappos, J., Zhuang, Y., Oliveira D., Rosenthal, M., & **Yeh, K.-C.** (2014). Vulnerabilities as blind spots in developer's heuristic-based mental models. *New Security Paradigms Workshop*. Victoria, BC, Canada: ACM.
- Rosenthal, M., Morin, N., **Yeh, K.-C.**, Cappos, J., Zhuang, Y., and Oliveira, D. (2014). It's the Psychology Stupid: How Heuristics Explain Software Vulnerabilities and How Priming Can Illuminate Developer's Blind Spots. *Annual Computer Security Applications Conference*. New Orleans, Louisiana, USA.
- Houghton, N., **Yeh, K.-C.**, Nworie, J. & Romero, L. (2013). Digital disturbances, disorders, and pathologies: A discussion of some unintended consequences of technology in higher education. *Educational Technology* 53(4), 3–16. [Lead article]
- Ritter, F. E., **Yeh, K.-C.**, Cohen, M. A., Weyhrauch, P., Kim, J. W., & Hobbs J. N. (2013). Declarative to procedural tutors: A family of cognitive architecture-based tutors. *In Proceedings of the 22nd Conference on Behavior Representation in Modeling and Simulation*.
- Yeh, K.-C.**, Xie, Y., & Ke, F. (2011). Teaching computational thinking to non-computing majors using spreadsheet functions. *In Proceedings of the Frontiers in Education Conference* (p. F3J1–F3J5). Rapid City, SD: Stipes Publishing LLC.
- Yeh, K.-C.** & Chen, W. (2011). WIP: Using a computer gaming strategy to facilitate undergraduates' learning in a computer programming course: An experimental study. *In Proceedings of the Frontiers in Education Conference* (p. S4H1–S4H2). Rapid City, SD: Stipes Publishing LLC.
- Ritter, F. E. & **Yeh, K.-C.** (2011). A mobile tool to help users moderate caffeine intake by displaying caffeine pharmacokinetics and pharmacodynamics. In R. Goebel, J. Siekmann, & W. Wahlster. (Eds.), *Augmented Cognition International Conference 2011, FAC2011, HCII 2011, LNA16780*, (pp. 528–535). Heidelberg: Springer. doi: 10.1007/978-3-642-21852-1.
- Yeh, K.-C.**, Gregory, J., & Ritter, F. E. (2010). One laptop per child: Polishing up the XO Laptop user experience. *Ergonomics in Design*, 18(3), 8–13. [Lead article]
- Yeh, K.-C.** (2009). Using an educational computer game as a motivational tool for supplemental instruction delivery. *In Proceedings of the 20th Annual Society for Information Technology and Teacher Education International Conference*. Charleston, SC.
- Chen, W. & **Yeh, K.-C.** (2006). Work in progress: Creating a case-based reasoning digital library to improve learning in an introductory programming course. *In Frontiers in Education (FIE) Conference*. San Diego, CA: ASEE/IEEE. doi:10.1109/FIE.2006.322392.
- Cox, C., Nguyen, H., Xie, Y., **Yeh, K.-C.** & Sharma, P. (2004). Defining leadership for college students: A needs assessment approach. In G. Rice & D. Baker (Eds.), *In Proceedings of the Thirty-Four Annual Conference of the International Society for Exploring Teaching and Learning* (pp. 58–59). Baltimore, MD: ISETL.

## Presentations

- Yeh, M. K.-C.** (2018) Exploring the root causes of recurring issues in software development from a human factors perspective. Research centre on Interactive media, Smart systems and Emerging technologies (RISE). Nicosia, Cyprus. 1 November 2018. [Invited talk]
- Yeh, M. K.-C.** (2011). Design and evaluation mobile learning applications using HCI principles. Department of Educational Technology. Tamkang University. Taiwan. 1 June 2011. [Invited talk]
- Yeh, M. K.-C.** (2005). What does a one-to-one computer environment mean to teachers in an elementary school? Teacher's perception of one-to-one laptop computers in classrooms. Association for Educational Communications and Technology, Orlando, FL.
- Peck, K., Popp, J. D., Haughton, H. & **Yeh, M. K.-C.** (2001). PT3 database project. Association for Educational Communications and Technology, Atlanta, GA.

## Grants and Support

- Schreyer Institute for Teaching Excellence (August 2019). "The Effect of Academic Motivation and Readiness in the Outcome of Using a Flipped Pedagogical Strategy in a College Mathematics Course." **Yeh** (PI). \$600
- Penn State Global Programs (April 2019 – March 2020). "Leveraging human brainwave and eye gaze to harness the theory of computer program comprehension." **Yeh** (PI). \$50k.
- Charles River Analytics. (April 2018 – April 2020). "STTR: Simulating Training Results to Understand Differing Effects of Fidelity on Learning (STRUDEL)." Ritter (PI). **Yeh** (Co-PI). \$113k.
- Charles River Analytics. (July 2017 – July 2018). "STTR: Support for SAVE-IT: A System for Analyzing and Visualizing Evaluations of Instruction Techniques." Ritter (PI). **Yeh** (Co-PI). \$70k.
- Center for Online Innovation in Learning (January 2017 – June 2018). "Beyond Data Dashboards: The Effects of Social Performance Visualizations on Learner Progress and Peer-to-Peer Interaction." Wang (PI). Garbrick, Gregg, Leitzell, Peck, Pursel, and **Yeh** (Co-PI). Sponsor: Center for Online Innovation in Learning, Penn State. January 2017 – June 2018. \$40K.
- Office of Naval Research (April 2015 – March 2020). "Maintenance Training under Uncertainty: Expanding a Smart Tutoring System to Support Acquisition and Retention of Skills." Ritter (PI). **Yeh** (Co-PI). \$3.4m.
- Office of Naval Research (2015 – 2017). "Building Trauma Triage Tutors for Air Force Nurses and Extending Learning Theory." (SBIR phase II with Charles River Analytics.) Ritter (PI). **Yeh** (Co-PI). \$240k.

Office of Naval Research (May 2015 – October 2015). “CRAM-LESS: Exploring Strategy Learning in a Diagnostic Reasoning Task.” (STTR with Charles River Analytics.) Ritter (PI). **Yeh** (Co-PI). \$30k.

National Science Foundation. (January 2015 – December 2016). “Using Cognitive Techniques to Detect and Prevent Security Flaws.” Cappos (PI). **Yeh**, and Zhuang (Co-PIs). \$240k (\$100k to Penn State).

Charles River Analytics, Inc. (June 2011 – December 2011). “STTR: Support for high-level tools for faster tutoring.” Ritter (PI). Haynes and **Yeh** (Co-PIs). \$49.7k.

Schreyer Institute for Teaching Excellence, Penn State. (2010). “The IQs System—an intelligent quiz system for mobile learning.” **Yeh** (PI). \$1.1k.

## Education

PhD, Penn State University, 2009 (Instructional Systems).

Thesis: Toward understanding the cognitive processes of software design in novice programmers.

Advisors: Christopher Hoadley and Kyle Peck.

Graduate course work, Penn State University, 2002 to 2003 (Management Science and Information Systems).

MEng, Penn State University, 2001 (Computer Science and Engineering).

BS, Tamkang University, 1993 (Computer Science and Information Engineering).

## Experience

### At Penn State

Assistant Professor of Information Sciences and Technology, 2015–present

Assistant Professor of Computer Science & Engineering, 2009–2015

Web Support Graduate Assistant, 2007

ActionScript Developer, Summer 2006

Learning Skill Center Coordinator, 2006

Web Developer/System Administrator, 2000

### Industry

Software engineer, Skanhex Technology Inc. 1997

Software engineer, Avigramm Technology Inc. 1997

Software engineer, Behavior Tech Computer Corp. 1996

System engineer, Total Integra Technology Inc. 1995

## **Teaching and Advising**

### **Teaching**

At Penn State (\* indicates course revision):

IST 110: Introduction to information sciences and technology

IST 111S: Seminar in IST

IST 210: Organization of data

IST 220: Networking and telecommunications

IST 230: Language, logic, and discrete mathematics

IST 250: New media and the Web

IST 255: Fundamentals of web administration

IST 311: Object-Oriented Design and Software Applications

IST 331\*: Organization & design of information systems: Users & system principles

CMPSC 201: C++ programming for engineers

CMPSC 203: Introduction to spreadsheets and databases

CMPSC 221: Object-oriented programming with web apps

CSE 297x: Introduction to programming with PHP

CSE 397x: Intermediate programming with PHP and MySQL

### **Advising**

Current students

Nicole Wang, doctoral student. (2017 – 2020)

Peixu Cai, undergraduate student (2019 – present)

Abhinav Pandey, undergraduate student (2020 – present)

Previous students

Dr. Yu April Yan. (2016 – 2019)

Nick McManus, undergraduate student. (2018 – 2019)

Himani Vommi, undergraduate student (2019 – 2019)

Abtin Toshtzar, undergraduate student. (2016 – 2018)

Juwan R. Armanie, undergraduate student. (Summer 2015, CERI-REU)

## **Services**

### **Service Work at Penn State**

Undergraduate Research Committee, Penn State Brandywine, 2016, 2018 – present.

Technology Advisory Committee, Penn State Brandywine, 2015 – present.  
Teaching Excellence Committee, Penn State Brandywine, 2017 – 2018.  
Sustainability Committee, Penn State Brandywine, 2017 – 2018.  
Engineering Faculty Search Committee, Penn State Brandywine, 2017 – 2018.  
IST Faculty Search Committee, Penn State Brandywine, 2016 – 2017.  
Global Cyber Learning Factory, Computer Science and Engineering, Penn State, 2012 – 2013.  
Academic Advisor, Engineering Advising Center, Penn State, 2010.  
Student Technology Advisory Committee: Instructional System, Penn State, 2004 – 2005.  
Technology Learning Assistant, Teaching and Learning with Technology, Penn State, 2004.

### **External Committee Work**

Webmaster, State College Chinese Alliance Church, 2013–2015.  
Board member, State College Chinese Alliance Church, 2005–2015.  
Association for Educational Communication and Technology (AECT) Website Design Taskforce, 2004.  
Webmaster, Taiwanese Student Association, Penn State, 2002–2008.

### **Grant and Paper Reviewer**

National Science Foundation (STEM-C Partnerships; STaC)  
International Journal of Human-Computer Interaction (since 2009)  
Computers & Education (since 2010)  
Journal of Educational Computing Research (since 2009)  
Computational and Mathematical Organization Theory (since 2010)  
Behavior Representation in Modeling Simulation Conference (2011)

## **Other Activities**

### **Software Projects (most recent)**

Two-minute STEM Drill (name to be determined): a mobile learning system for middle school students in STEM subjects.  
Caffeine Zone: an iPhone application that monitors and teaches caffeine consumption. (Available on the iTunes Store and explained at <http://caffeinezone.net>; more than 80k downloads; reported by many medias such as BusinessWeek, Self magazine, Health magazine, ScienceDaily, Brisbane Times, Appisaurus)  
IQs: an intelligent quiz system that facilitates learning through mobile devices.