

# FRANÇESKA XHAKAJ

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## EDUCATION

- 2015 - 2021 **Ph.D. Human-Computer Interaction**  
**School of Computer Science, Carnegie Mellon University, Pittsburgh, PA**  
*Dissertation:* Investigating How To Support Teachers In Their Teaching And Help Them Improve Their Practices Through Data And Technology.  
*Advisor:* Amy Ogan  
*Thesis Committee:* John Zimmerman, Geoff Kaufman, Marsha Lovett
- 2015 - 2017 **M.S. Human-Computer Interaction**  
**School of Computer Science, Carnegie Mellon University, Pittsburgh, PA**
- 2015 - present **PIER Fellowship Associate**  
Program for Interdisciplinary Education Research funded by the Institute of Education Sciences
- 2011 - 2015 **B.S. Computer Science**  
GPA: 3.92/4.00  
**Lafayette College, Easton, PA**  
Minor in Mathematics  
Summa Cum Laude, Honors in Computer Science  
*Thesis:* Intelligent tutors and granularity: A new approach to Red Black Trees.  
*Advisor:* Chun Wai Liew

## AWARDS AND HONORS

- 2019 [Alan J. Perlis Graduate Student Teaching Award](#), *Carnegie Mellon University*  
This award honors graduate students who have displayed the highest degree of excellence in and dedication to teaching in the School of Computer Science at Carnegie Mellon University.
- 2019 Graduate Student Assembly Departmental Appreciation Award, *Carnegie Mellon University*
- 2015 Summa Cum Laude, Honors in Computer Science, *Lafayette College*
- 2014 UPE Special Recognition Award, *Upsilon Pi Epsilon International Honor Society for the Computing and Information Disciplines*
- 2014 James P. Schwar Prize, *Lafayette College*  
Awarded annually to a deserving computer science student.
- 2011 - 2015 Walter Oechsle Scholarship, *Lafayette College*
- 2012, 2013 Grace Hopper Celebration of Women in Computing Scholarship, *Grace Hopper Conference*

## TEACHING & MENTORING EXPERIENCE

### TEACHING EXPERIENCE

- Instructor [Principles of Computing \(15-110\)](#), Fall 2021  
*School of Computer Science, Carnegie Mellon University*
- This semester I am co-instructing (with Dr. Kelly Rivers) the intro course 15-110, a course in fundamental computing principles.
  - The course has ~300 students and ~30 TAs and is being conducted in-person.

- Instructor **Introduction to Data Structures (15-121), Fall 2021**  
*School of Computer Science, Carnegie Mellon University*
- This semester I am also an instructor for the intro course 15-121, an introduction to data structures in Java. (~50 students, 5 TAs). The course is being conducted in-person.
- Instructor **Principles of Computing (15-110), Summer 2020**  
*School of Computer Science, Carnegie Mellon University*
- Instructor (with Norman Bier) of the intro course 15-110, a course in fundamental computing principles. This course was conducted fully online due to the 2020 pandemic.
  - Lead daily lectures over Zoom (71 students) and designed online active learning activities.
  - Worked on course and curriculum redesign to adapt the class to online learning.
  - Xhakaj Overall Evaluation: 4.56/5.0
- Instructor **CS Pedagogy (15-890), Spring 2020**  
*School of Computer Science, Carnegie Mellon University*
- Instructor (with Charlie Garrod and Michael Hilton) of 15-890, a course targeted toward students who are interested in improving their ability to teach computer science and who are interested in the science of teaching and learning.
  - Supported curriculum redesign by deciding topics and concepts for the course. Lead class discussions (7 students) on various pedagogy and CS Education research topics.
  - Xhakaj Overall Evaluation: 4.4/5.0
- Instructor **Principles of Computing (15-110), Summer 2019**  
*School of Computer Science, Carnegie Mellon University*
- Instructor (with Norman Bier) of the course 15-110, a course in fundamental computing principles.
  - Lead daily lectures (49 students) and designed active learning activities.
  - Designed exam questions, held office hours, mentored students.
  - Xhakaj Overall Evaluation 4.5/5.0
- Head TA **User-Centered Research and Evaluation (UCRE), Fall 2018**  
*Human-Computer Interaction Institute, Carnegie Mellon University*
- Supported course and curriculum redesign, decided topics/concepts for the course, created learning goals for projects/assignments, structured projects/assignments over the semester.
  - Created assignments, projects and questions for the final exam.
  - Designed grading rubrics for assignments/exams and graded individual and group work.
  - Taught recitation (20 students), supervised individual and group work, held office hours.
  - Xhakaj Overall Evaluation: 4.92/5.0
- TA **Programming Usable Interfaces (PUI), Spring 2018**  
*Human-Computer Interaction Institute, Carnegie Mellon University*
- Taught recitation (~20 students).
  - Designed labs and homework assignments, created quiz and exam questions, designed grading rubrics, graded student work, held office hours.
- TA **Algorithms and Data Structures (CS150), 2013 – 2014**  
*Department of Computer Science, Lafayette College*
- Led and oversaw lab sessions, built some assignments and lab worksheets.

## TEACHING GUEST LECTURES

### **Grad research seminar on Second Language Acquisition, Fall 2019**

*Department of Modern Languages, Carnegie Mellon University*

Lecture on my work on ClassInSight and using data to help support teachers in their teaching.

### **Programming Usable Interfaces (PUI), Fall 2019**

*Human-Computer Interaction Institute, Carnegie Mellon University*

Lecture on how to prototype with the InVision technology.

**Programming Usable Interfaces (PUI)**, Spring 2018  
*Human-Computer Interaction Institute, Carnegie Mellon University*  
Lecture on user-centered design methods and examples of their use in my research.

## STUDENT MENTORING AND ADVISING

*Throughout my Ph.D., I have had the honor of working with outstanding students, undergraduates and masters, from CMU and other schools. Their majors were interdisciplinary, including CS, HCI, design, business, statistics, etc. The majority of the students were from underrepresented groups in STEM.*

### **Undergraduate Independent Study and Research Assistants, Fall 2020**

Mentoring one undergraduate student in their Independent Study, three undergraduate students and one master student as Research Assistants on the ClassInSight project.

### **Research Experience for Undergraduates (REU), Summer 2020**

Mentored two undergraduate students in their REU projects (ClassInSight and Prol for Professionals).

### **Undergraduate Independent Study and Research Assistants, Spring 2020**

Mentored a master student in their Independent Study and six undergraduate and master students as Research Assistants on the ClassInSight project.

### **Undergraduate Independent Study and Research Assistants, Fall 2019**

Mentored sixteen undergraduate and master Research Assistants on the ClassInSight project.

### **Research Experience for Undergraduates (REU), Summer 2019**

Mentored five students as they conducted research and software development on ClassInSight.

### **Undergraduate Independent Study, Fall 2018, Spring 2019**

Mentored two undergraduate students each semester in their Independent Study projects on ClassInSight.

### **Research Experience for Undergraduates (REU), Summer 2016**

Mentored five students on research and software development of an Intelligent Tutoring System.

### **LearnLab Summer School at CMU, ITS Track, Summer 2015 - 2018**

Supervised small group projects in developing Intelligent Tutoring Systems for various domains.

## PROFESSIONAL DEVELOPMENT

- 2018 - present **Future Faculty Program**, Eberly Center Teaching Excellence & Education Innovation, CMU  
Attended various professional development workshops and seminars which covered a wide range of topics on teaching and learning. Received feedback twice on my teaching through classroom observations and microteaching workshops. Completed a statement of teaching philosophy project.
- 2015 - present **Program for Interdisciplinary Education Research (PIER)**, Carnegie Mellon University  
Attended research seminars from various educational researchers. Networked and received mentoring from educational experts. Took a range of courses on education, including [Research Methods for the Learning Sciences \(05-748\)](#), [Educational Goals, Instruction and Assessment \(85-738\)](#), [Scientific Research in Education \(85-736\)](#), [Personalized Online Learning \(05-832\)](#).
- Fall 2018 **Computer Science Pedagogy (15-539/15-890)**, Carnegie Mellon University  
Took this course which was aimed at helping students improve their ability to teach computer science.

## RESEARCH EXPERIENCE

- 2019 - 2021 *Project: ClassInSight: Practical Classroom Sensing at Scale for Instructor Professional Development with Dr. Amy Ogan, Dr. Chris Harrison, Dr. Yuvraj Agarwal, Carnegie Mellon University*
- 2018 *Project: Improving Introductory Computer Programming Instruction by Supporting Conceptual Learning with an Intelligent Tutoring System with Dr. Vincent Aleven, Carnegie Mellon University*

2015 - 2018	<i>Project: Helping Teachers Help Students: Teacher's Use of Intelligent Tutoring Systems Analytics to Improve Learning</i> with Dr. Vincent Aleven and Dr. Bruce M. McLaren, <i>Carnegie Mellon University</i>
Summer 2015	<i>Project: Integrating Errors into the Lynnette Cognitive Tutor, an Intelligent Tutoring System for Linear Equation Solving</i> with Dr. Vincent Aleven, <i>Carnegie Mellon University</i>
Summer - Fall 2014	<i>Project: Integrating Intelligent Tutoring Systems in MOOCs (Massive Open Online Courses)</i> Undergraduate Student Researcher with Dr. Vincent Aleven, <i>Carnegie Mellon University</i>
Spring 2014	<i>Project: Creating tutors to support geology field projects</i> EXCEL Student Researcher with Dr. Chun Wai Liew, <i>Lafayette College</i>
January 2013	<i>Project: Computational Modeling of Fish Evolution</i> EXCEL Student Researcher with Dr. Chun Wai Liew, <i>Lafayette College</i>
Summer 2013	<i>Project: Studying the dynamic behavior of JavaScript objects</i> Undergraduate Student Researcher with Dr. Barbara G. Ryder, <i>PROLANGS@VT, Virginia Tech</i>
Summer 2013	<i>Project: Using HMM and the Viterbi Algorithm on the Iterated Diner's Dilemma game</i> EXCEL Student Researcher with Dr. Chun Wai Liew, <i>Lafayette College</i>

## CONFERENCE PUBLICATIONS

- C1. **Xhakaj, F.**, Ngoon, T., Ogan, A. (2022). ClassInSight: Motivating Goal-Setting & Behavior Change for College Instructors. *Under submission at the CHI 2022 conference.*
- C2. **Xhakaj, F.**, Ogan, A., et al. (2021) Investigating teacher data needs in terms of teacher immediacy and nonverbal behaviors. *In Proceedings of the 15th ISLS 2021 conference.*
- C3. Ahuja, K., Shah, D., Paredy, S., **Xhakaj, F.**, Ogan, A., Agarwal, Y., Harrison, Ch. (2021) Classroom Digital Twins with Instrumentation-Free 6DOF Gaze Tracking. *In CHI 2021 conference.*
- C4. Ahuja, K., Kim, D., **Xhakaj, F.**, Varga, V., Xie A., Zhang, S., Townsend, J. E., Harrison, Ch., Ogan, A., & Agarwal, Y. (2019). EduSense: Practical Classroom Sensing at Scale. *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.*
- C5. **Xhakaj, F.**, & Aleven, V. (2018). Towards Improving Introductory Computer Programming with an ITS for Conceptual Learning. *In International Conference on Artificial Intelligence in Education, AIED 2018*, pp. 535-538.
- C6. Bodily, R., Kay, J., Aleven, V., Davis, D., Jivet, I., **Xhakaj, F** & Verbert, K. (2018) Open learner models and learning analytics dashboards: A systematic review. *In Proceedings of the International Conference on Learning Analytics and Knowledge, LAK 2018*, pp. 41-50.
- C7. **Xhakaj, F.**, Aleven, V., McLaren, B.M. (2017). Effects of a Teacher Dashboard for an Intelligent Tutoring System on Teacher Knowledge, Lesson Planning, Lessons and Student Learning. *In Proceedings of the European Conference on Technology Enhanced Learning, EC-TEL 2017*, pp. 315-329.
- C8. **Xhakaj, F.**, Aleven, V., McLaren, B.M. (2017). Effects of a dashboard for an intelligent tutoring system on teacher knowledge, lesson plans and class sessions. *In Proceedings of the International Conference on Artificial Intelligence in Education, EC-TEL 2017*, pp. 582-585.
- C9. **Xhakaj, F.**, Aleven, V., McLaren, B.M. (2016). How teachers use data to help students learn: Contextual Inquiry for the design of a dashboard. *In Proceedings of the European Conference on Technology Enhanced Learning, EC-TEL 2016*, pp. 340-354.
- C10. Aleven, V., **Xhakaj, F.**, Holstein, K., & McLaren, B. M. (2016). Developing a teacher dashboard for use with ITSs. *In Proceedings of the International Workshop on Teaching Analytics, EC-TEL 2016.*

- C11. Holstein, K., **Xhakaj, F.**, Aleven, V., & McLaren, B. M. (2016). Luna: A dashboard for teachers using intelligent tutoring systems. In *Proceedings of the International Workshop on Teaching Analytics, EC-TEL 2016*.
- C12. Aleven, V., Sewall, J., Popescu, O., **Xhakaj, F.**, Chand, D., Baker, R. S., & Gasevic, D. (2015). The beginning of a beautiful friendship? Intelligent tutoring systems and MOOCs. In *Proceedings of the International Conference on Artificial Intelligence in Education, AIED 2015*, pp. 525–528.
- C13. Liew, C. W., & **Xhakaj, F.** (2015). Teaching a complex process: Insertion in Red Black Trees. In *Proceedings of the International Conference on Artificial Intelligence in Education, AIED 2015*, pp. 698–701.
- C14. **Xhakaj, F.**, & Liew, C. W. (2015). A new approach to teaching Red Black Trees. In *Proceedings of the Conference on Innovation and Technology in Computer Science Education, ITICSE 2015*, pp. 278–283.

## JOURNAL PUBLICATIONS

- J1. Wei, Sh., **Xhakaj, F.**, & Ryder, B.G. (2015) Empirical Study of the Dynamic Behavior of JavaScript Objects. *Journal of Software: Practice and Experience*, 46, 7, 867–889.

## UNPUBLISHED SENIOR THESIS

- T1. **Xhakaj, F.** (2015). Intelligent tutors and granularity: A new approach to Red Black Trees. Unpublished senior thesis, Department of Computer Science, Lafayette College, Easton, Pennsylvania. USA.

## RESEARCH TALKS

- 2016 EC-TEL 2016 Conference: *How Teachers Use Data to Help Students Learn: Contextual Inquiry for the Design of a Dashboard*.
- 2017 EC-TEL 2017 Conference: *Effects of a Teacher Dashboard for an Intelligent Tutoring System on Teacher Knowledge, Lesson Planning, Lessons and Student Learning*.
- 2017 PIER Seminar: *Dashboard, Dashboard On the Wall, What About My Students Don't I Know?*
- 2018 AIED 2018 Conference: *Towards Improving Introductory Computer Programming with an ITS for Conceptual Learning*.
- 2018 PIER Seminar: *Supporting Conceptual Learning with an ITS for Improving Introductory Computer Programming Instruction*.
- 2018 PAWS Lab, Intelligent Systems Program: University of Pittsburgh, *Towards Improving Introductory Computer Programming with an ITS for Conceptual Learning*.

## LEADERSHIP AND SERVICE

### PROFESSIONAL SERVICE

- 2020 Panelist on a graduate school panel for undergraduate women, *Georgetown University*
- 2021 Reviewer for Computing Education Research papers, *SIGCSE 2021*
- 2019 Reviewer for Late Breaking Work papers, *CHI 2019*
- 2019 Graduate school panel moderator and conference organizer in the *Opportunities for Undergraduate Research in Computer Science (OurCS) conference*
- 2018 Student volunteer, *SIGCSE 2018*
- 2017 Organizer and Moderator in the *Opportunities for Undergraduate Research in Computer Science (OurCS) conference*

## INSTITUTIONAL SERVICE

- 2019 - present    **Director and founder of the Community for Teaching and CS Education at CMU**  
*School of Computer Science, Carnegie Mellon University*  
Working with teaching professors and students to build and develop a community at CMU for faculty and students who are interested in teaching and CS Education
- 2020    Member of SCS Student Teaching Award Selection Committee, *Carnegie Mellon University*
- 2017 - 2019    **Women in SCS**, leader and in organizing committee, *Carnegie Mellon University*
- 2017 - 2018    SCS4ALL Ph.D. Initiative, organizing committee, *Carnegie Mellon University*
- 2012 - 2015    Founder and President, Women in Computing, *Lafayette College*
- 2014 - 2015    President of Upsilon Pi Epsilon International Honor Society for the Computing and Information Disciplines, *Lafayette College*

## DEPARTMENT SERVICE

- 2019 - 2020    Student representative in the HCII **Curriculum Committee**
- 2019 - 2020    Student representative in the HCII **Faculty Hiring Committee**
- 2018 - 2019    HCII Ph.D. Tea Time Social
- 2016 - 2017    HCII Ph.D. Monthly Lunch Gatherings
- 2015, 2019    HCII Prospective Ph.D. Student Open House Organizer

## SKILLS

### ▲ Programming

Java, Python, JavaScript,  
HTML, CSS, C++, C, R,  
Jess, Intel IA32

### ▲ Tools

CTAT, Django, Ajax, jQuery,  
Heroku, NodeJs, SQLite,  
LaTeX, Mathematica,  
WordPress, Sketch,  
InVision, Adobe: Photoshop,  
Flash Player, InDesign

### ▲ Research Methods

Contextual Inquiry,  
Interpretation Sessions,  
Affinity Diagramming, Speed  
Dating, Storyboarding,  
Prototyping, Think Alouds,  
Classroom Studies

### ▲ Languages

English, Albanian, Italian,  
French, Greek, Korean