A. Cagla ACUN

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Ph.D. Candidate, my research focuses on interpretable machine learning, which is crucial for responsible AI.

EDUCATION

AUG 2023 EXPECTED	**Ph.D. - Computer Science and Engineering - University Louisville, Louisville, KY** Focus: Machine Learning - Advisor: Dr. Olfa Nasraoui
AUG 2018	**M.Sc. - Computer Science and Engineering - University Louisville, Louisville, KY** Focus: Data Science, Data Mining
JUN 2013	**B.Sc. - Computer Engineering - Hacettepe University, Ankara, Turkey** Honor Student

WORK EXPERIENCE

AUG 2017 PRESENT

Ph.D. Researcher - University of Louisville

Ph.D. candidate at the Knowledge Discovery and Web Mining Lab with Dr. Olfa Nasraoui. Working towards enabling explainability in machine learning to make black box machine learning algorithms more transparent and trustworthy.

- **Learning Supervised Models with a Novel Explainability Framework** (In Preparation): developing a novel model-agnostic framework to explain black-box machine learning algorithms.
- **A Data Science Approach to Flagging Non-Retention in Engineering Enrollment Data** [3]: Designed and implemented a data science pipeline for retention analysis. We analyzed the number of consecutive non-enrolled terms, referred to as enrollment gaps, and found that the best short-term criteria is "three consecutive semesters not enrolled in engineering." With this criterion, we can reliably label a given student as not-retained. The proposed retention threshold approach has the following advantages: It does not rely on the requirement of earning a degree in engineering and could be applied across a variety of fields of study, it is not based on enrollment at a fixed point in time, and it can be used as the data set continues to grow. Most importantly, while other common heuristics use grades, success in certain consecutive courses, or even demographics; our method only uses enrollment (and hence enrollment gap) data. This is a significant advantage given that the enrollment data is always available; whereas other commonly used feature heuristics for retention determination are not always available or may only apply to subsets of students.
- **Finding the Right Questions: Using Data Science to Close the Loop with Classroom Response Systems** [2]: Developed a data science methodology for CRS data accumulated from daily activities in two sections of an engineering mathematics course. The data is collected from the CRS Learning Catalytics where students respond to questions in two rounds following the team-based learning model. This study we examined the effect of disagreement between individual responses on student performance and identified which activity question scores, individual versus team-based, are associated with better exam performance, thus allowing the reduction of the number of questions.
- **Developed a data science pipeline for educational data: a case study using Learning Catalytics in the active learning classroom** [1]: We used a combination of data mining and classical statistical techniques to reveal the trends and peculiarities in the data, without having a specific question or topic to investigate. The data science pipeline which we present has four major stages: data preprocessing, exploratory factor analysis, visualization, and feature engineering. Our study revealed some trends and clusters within and across course units. Analysis results show the differences and similarities within the course units and help track learner behavior.

AUG 2017 JUNE 2020

Graduate Student Assistant - REACH University of Louisville

- Managed the Computer Resource Center and Academic Leadership Center, hiring, training, and evaluating tutoring staff, resolving computer hardware/software problems, scheduling the tutors working hours, liaising with designated course faculty, conducting test review sessions, presenting workshops that engage students, providing tutoring to students on an as needed basis, ensuring data is logged correctly into the usage tracking system, and promoting REACH services.
- Tutored undergrad computer science students both in-person and in group settings. Courses: CSE 130 Introduction to Programming Languages(C/C++), CSE 220 Object Oriented Program Design with Java, CSE 302 Data Structures.

June 2013	**Software Developer - INNOVA IT Solutions**
Aug 2014	Developed new features to the system as requirements updated and fixed bugs. Worked with an Agile, Scrum methodology to ensure delivery of high quality work with every monthly iteration. Involved in every step of software development life cycle; design, development, testing and implementation. Wrote SQL scripts and designed user-friendly interfaces. Utilized such as in the project are Java, Spring, Hibernate, PL SQL.
Sep 2012	**Undergrad Researcher - Hacettepe University**
Jun 2013	Implemented social network analysis method on the scientific literature data. The project involved implementing social network analysis module to the kaynakca.info, website for a managing reference system and making a bibliometric analysis on Bibliography of Turkey. It also serves as a networking website for scientists and researchers to share, research, and collaborate.
Aug 2012	**Intern - Research Institute for Software Development (TUBITAK)**
Jun 2012	Developed a mobile application that works synchronously with the web-based application to take and save photos with their GPS coordinate information into the system. Android and PrimeFaces framework are used in mobile application.
Aug 2011	**Intern - National Academic Network and Information Center (TUBITAK)**
Jun 2011	Worked on reporting and analyzing national academic networks. Wrote SQL scripts, and fixed the errors on current system.

Skills

Python, PyTorch, Java, C/C++, SQL

Awards

May 2021	**CSE Arthur M. Riehl Award**
	Given by J. B. Speed School of Engineering, University of Louisville. The award is given to a graduate student with excellent academic performance and contributions to the department activities.
Feb 2019	**Best Poster Presentation Award**
	Given by Graduate Student Regional Research Conference (GSRRC) Committee
Aug 2014	**Study Abroad Scholarship**
	Given by Ministry of National Education, Turkey (tuition, fees, and monthly stipend)
Sep 2012	**Undergrad Senior Project Grant**
	Given by The Scientific and Technological Research Council of Turkey, TUBITAK.

Publications

[1] A. C. Acun, J. L. Hieb, and O. Nasraoui, "Using a data science pipeline for course data: A case study analyzing, heterogeneous student data in two flipped classes," in *2019 ASEE Annual Conference & Exposition*, https://peer.asee.org/33492, Tampa, Florida: ASEE Conferences, Jun. 2019.

[2] A. C. Acun, O. Nasraoui, and J. L. Hieb, "Work in progress: Finding the right questions: Using data science to close the loop with classroom response systems," in *2019 ASEE Annual Conference & Exposition*, https://peer.asee.org/33619, Tampa, Florida: ASEE Conferences, Jun. 2019.

[3] M. Boujelbene, K. Damak, A. C. Acun, *et al.*, "A data-science approach to flagging non-retention in engineering enrollment data," in *2020 ASEE Virtual Annual Conference Content Access*, https://peer.asee.org/33996, Virtual On line: ASEE Conferences, Jun. 2020.