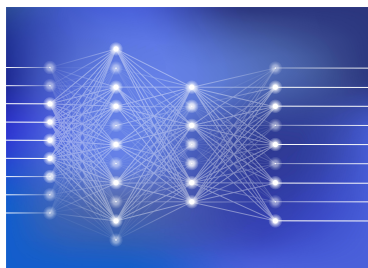




Research Frontier

Dynamic Feature Acquisition Using Denoising Autoencoders

In real-world scenarios, different features have different acquisition costs at test time which necessitates cost-aware methods to optimize the cost and performance tradeoff. This paper introduces a novel and scalable approach for cost-aware feature acquisition at test time. The method incrementally asks for features based on the available context that are known feature values. The proposed method is based on sensitivity analysis in neural networks and density estimation using denoising autoencoders with binary representation layers. In the proposed architecture, a denoising autoencoder is used to handle unknown features (i.e., features that are yet to be acquired), and the sensitivity of predictions with respect to each unknown feature is used as a context-dependent measure of informativeness. We evaluated the proposed method on eight different real-world data sets as well as one synthesized data set and compared its performance with several other approaches in the literature. According to the results, the suggested method is capable of efficiently acquiring features at test time in a cost- and context-aware fashion.



IEEE Transactions on Neural Networks and Learning Systems, Aug. 2019

Educational Activities

IEEE CIS Technical Challenge with US\$20,000 of prize money to grab

The IEEE Computational Intelligence Society (IEEE CIS) is very pleased to announce its first Technical Challenge. The challenge is hosted by Kaggle at <https://www.kaggle.com/c/ieee-fraud-detection>. The dataset is donated to the challenge by the world's leading payment service company, Vesta Corporation. In addition to US\$20,000 of prize money to grab, the challenge attracted 300+ entries in its first 24 hour with more teams joining constantly. For the first time, the challenge permits the use of automated machine learning tool(s) (AML) in the creation of Submissions. However, AML Teams (as defined in the Rules) are not eligible to win any prizes.

Bring your machine learning skills, and your best classification algorithm to give it a go and win one of the three cash prizes. IEEE CIS invites its members and any data scientist to submit

CIS Conferences

- ★ [Conference Calendar \(2019-2021\)](#)
- ★ [2019 IEEE International Conference on Data Science and Advanced Analytics \(DSAA\)](#)
Washington, DC USA
5-8 Oct. 2019
- ★ [2019 6th International Conference on Behavioral, Economic and Socio-Cultural Computing \(BESC\)](#)
Beijing, China
28-30 Oct. 2019
- ★ [2019 Third International Conference on Intelligent Computing in Data Sciences \(ICDS\)](#)
Marrakech, Morocco
28-30 Oct. 2019
- ★ [2019 7th International Conference on Robot Intelligence Technology and Applications \(RiTA\)](#)
Daejeon, South Korea
1-3 Nov. 2019
- ★ [2019 IEEE Symposium Series on Computational Intelligence \(IEEE SSCI 2019\)](#)

entries to the first IEEE CIS Technical Challenge.

Technical Challenge Timelines -- Competition Timeline

- Merger Deadline: 24 September 2019 11:59 PM UTC
- Entry Deadline: 24 September 2019 11:59 PM UTC
- External Data Disclosure Deadline: 24 September 2019, 11:59pm UTC
- End Date (Final Submission Deadline): 1 October 2019 11:59 PM UTC

Please visit the competition rules for more information on deadlines

<https://www.kaggle.com/c/ieee-fraud-detection/rules>.

TOTAL PRIZES AVAILABLE: US\$20,000

- First Prize: US\$10,000
- Second Prize: US\$7,000
- Third Prize: US\$3,000

Winners will be required to submit a write-up for the IEEE CIS Conference, to which they are invited and highly encouraged to attend and present their work. Visit the Technical Challenge on Kaggle for more information <https://www.kaggle.com/c/ieee-fraud-detection>.

Member Activities

Women in CI / Featured Archived Webinar

Challenging the stigma surrounding the role of women in technology, a journey from combinatorial optimization to IBM

Dr Amy Khalfay, IBM Global Business Services

Webinar link: <http://ieeetv.ieee.org/careers/challenging-the-stigma-surrounding-the-role-of-women-in-technology-a-journey-from-combinatorial-optimization-to-ibm?rf=channels|56&>

Many people feel that you must have studied a certain degree, know a programming language, or prefer to work alone to be able to have a career in technology. This is not the case, these careers are open to everyone, from any background. During this session we will be exploring some of the misconceptions about careers within STEM, discovering the many types of roles and doing some myth busting. We will also discuss my personal journey to becoming a graduate technology consultant for IBM, my background of research and my commitment to ensuring more females enter STEM careers. My PhD, titled "Optimization heuristics for solving technician and task scheduling problems", focused on solving NP-hard combinatorial optimization problems that arise in the real world and was sponsored by industry. The project enabled me to enhance my soft skills, write academically, learn to code and develop a deeper understanding of real-world business problems and innovative ways to solve them. Biography: Dr Amy Khalfay is currently a graduate technology consultant for IBM, joining in October 2017. Prior to this Amy completed a BSc in Mathematics (2014) and a PhD in Operational Research (2017). Amy is also a committee member of IEEE Women in Engineering. Amy's research area is combinatorial optimisation solving NP-hard scheduling problems. Areas of skill include Java, Statistical Analysis, Mathematical Modelling and Algorithm Design and Development.



Call for Papers (Journal)

Xiamen, China
6-9 Dec. 2019

★ [2020 12th International Conference on Agents and Artificial Intelligence \(ICAART\)](#)

Valletta, Malta
22-24 Feb. 2020
(Submission: 4 Oct. 2019)

★ [4th International Conference on Computational Intelligence and Networks \(CINE 2020\)](#)

Kolkata, India
27-29 Feb. 2020

★ [2020 IEEE Conference on Evolving and Adaptive Intelligent Systems \(EAIS\)](#)

Bari, Italy
27-29 May 2020

★ [2020 IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications \(CIVEMSA\)](#)

Tunis, Tunisia
22-24 Jun. 2020

★ [2020 IEEE World Congress on Computational Intelligence \(WCCI\)](#)

Glasgow, UK
19-24 Jul. 2020
(Submission: 15 Jan. 2020)

★ [2020 IEEE Conference on Games \(CoG\)](#)

Higashiosaka, Japan
24-27 Aug. 2020

★ [2020 Joint IEEE 10th International Conference on Development and Learning and Epigenetic Robotics \(ICDL-EpiRob\)](#)

Valparaíso, Chile
7-10 Sep. 2020

- [IEEE TFS Special Issue on Fuzzy Based AI: Emerging Techniques and their Applications \(1 Aug\)](#)
- [IEEE TFS Special Issue on Smart Fuzzy Optimization in Operational Research and Renewable Energy: Modelling, Simulation and Application \(1 Nov\)](#)

Call for Papers (Conference)

- [The 1st International Conference on Artificial Intelligence and Data Analytics for Air Transportation \(Oct 30\)](#)
- [The 12th International Conference on Advanced Computational Intelligence \(ICACI2020\) \(1 Dec \)](#)

Call for Participation (Conference)

- [The 15th International Conference on Predictive Models and Data Analytics in Software Engineering \(18 Sept\)](#)

★ [2020 IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology \(CIBCB\)](#)

Viña del Mar, Chile

27-29 Oct. 2020

(Submission: 1 May 2020)

★ [2020 IEEE Symposium Series on Computational Intelligence \(IEEE SSCI 2020\)](#)

Canberra, Australia

1-4 Dec. 2020

(Submission: 7 Aug 2020 -- strict deadline)

★ [2021 IEEE International Conference on Fuzzy Systems \(FUZZ-IEEE 2021\)](#)

Luxembourg

11-14 Jul 2021

★ [2022 IEEE World Congress on Computational Intelligence \(IEEE WCCI 2022\)](#)

Padua, Italy

11-16 Jul 2022

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