**Title of Talk/Workshop**

Hands-on Intro to developing Expalinability for Recommendation Systems

**Submission type \***

90 minutes workshop

**Abstract**:

Over the last decade, the commercial use of recommendation engines/systems by business has grown substantially, enabling the flexible and accurate recommendation of items/services to users. Examples of popular recommenders include (to name a few) movies, videos and books recommendation engines offered by Netflix, Youtube and Amazon respectively.

In general, most recommender systems are typically “black-box” algorithms trained to provide inference of relevant items to users using techniques such as collaborative or content-based filtering models or hybrid models. The algorithms used in these systems are broadly opaque, thus making the predicted recommendations lack full interpretability/explainability. Making recommenders explainable is very essential, as they try to provide transparency and address the question of why were particular items recommended by the engine to users/system designers.

Over the last few years there has been a growing area of research and development in explainable recommendation systems. Explainable recommendations systems are generally classified as Post-hoc (i.e. explainability is done post-recommendation) or Intrinsic (explainability is integrated into the recommender model) approaches. This workshop will provide a hands-on implementation of some of these approaches.

During this workshop a hands-on walk-through of each implemented approach will be demonstrated interactively in a notebook. Each approach will consist of the following steps: 1) Case study data will be pre-processed, 2) an explainable recommendation system/model will be trained and validated 3) recommendations will be predicted and finally 4) recommendation inference results and explainability metrics analysed/evaluated.

Specifically, the workshop will outline the following implementations:

1. Post-hoc approaches:
   1. Recommendations computed via collaborative filtering and explained using Association Rules
   2. Recommendations computed via Factorization Machines (FM) and explained using Locally Interpretable Model Agnostic Explanations (LIME)
2. Intrinsic approaches:
   1. Recommendations computed via Matrix Factorization (MF) and augmented/explained with neighbourhood-based explanation.
   2. Recommendations computed via Alternating Least Square (ALS) and augmented/explained with item-style explanation
3. Brief introduction to explainable recommendations using a Knowledge Graph-based model

The workshop will use the open source 100K Movielens dataset provided https://grouplens.org/datasets/movielens/.

All of the papers, libraries/packages and datasets used in this workshop are open source and will be provided in the workshop Git repo (which will be provided shortly).

Can your talk be classified into any of the Themes below? \*

* Tools, frameworks & libraries

Audience Level \*

* Those who are at an intermediate level of understanding and experience with ML