



## Project Proposal, IDC MLDS MSc

**Date:** 15/August/2020

**Title:** Learning Fashion Compatibility

**Mentor:** The project will be mentored and supervised by Dr. Asnat Messica

The high adoption of online fashion shopping requires effective recommendation services for customers. However, fashion recommendations are extremely challenging since effective recommendation should take into account the fine granularity of the items style, which is in many cases hard to describe and represent as a categorical feature. Recent advances in deep learning research enables incorporating latent representation of fashion items image and text description into a multi modal recommender system.

In this project, we will use a deep learning model including CNN and RNN elements to jointly learn a visual-semantic embedding and the compatibility relationships among fashion items in a fashion e-commerce site. More specifically, we consider a fashion outfit (set of stylish compatible fashion items) to be a sequence and each item in the outfit as a time step. Given the fashion items in an outfit, we train a bidirectional LSTM (Bi-LSTM) model to sequentially predict the next item conditioned on previous ones to learn their compatibility relationships. We will use this approach for different fashion recommendation tasks: suggesting an item that matches existing components in a set to form a stylish outfit, generating an outfit based on user textual or visual query and give a compatibility score to an outfit. A visual description of the tasks is depicted as Figure 1. The project relies on the following [paper](#) and public [dataset](#).

In this project the students will be expected to invest a total of one full work day every week. Experience and/or course work in Recsys and DL is required.

The end result of the project will be software that reproduces the results presented in the research paper above for three tasks: filling a missing item to complete an outfit, outfit generation given text or image, and outfit compatibility prediction on the paper's dataset. Bonus: enhancement of the proposed approach, and/or evaluation of the proposed approach on additional datasets that will be generated/identified by the students. The students will write a final report to describe the project approach, challenges and results, which will be assessed for its academic quality.

### Resources

Students will have access to server and cloud computing resources for data exploration, training the models and evaluating the results.

### Intellectual Property

Academic project. Any developed IP will be addressed when such occurs. Copyrights on the software will be owned by IDC

### Thesis

This project is a final project for 5 credits.

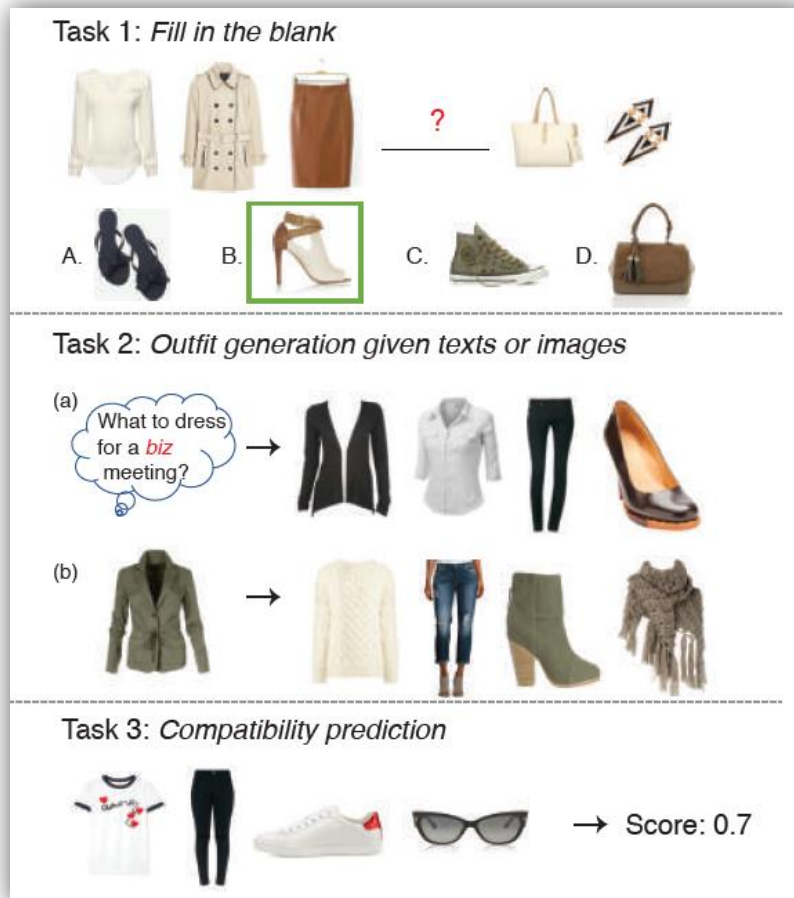


Figure 1 – Fashion recommendation tasks