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# PROJECTE DE DOCTORAT INDUSTRIAL EXPEDIENT 2016 DI 039

## DADES DE L'EMPRESA I DE L'ENTORN ACADÈMIC

### **Títol del projecte**

Visual Search For Fashion Products

### **Empresa**

Wide Eyes Technologies

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## BREU DESCRIPCIÓ DEL PROJECTE DE RECERCA

Fashion has a large impact on society and is a multi-billion dollar industry. Online sales in the year 2017 are expected to reach 191 billion Euros in Europe and 370 billion dollars in the USA. Developing tools to improve the interaction between sellers and buyers will be of paramount importance.

One such tool is the ability to search for fashion items using only an example picture of the desired (or a similar) item. This task is very difficult because of the deformable nature of most fashion items, as well as changes in viewpoint, image quality or background. Furthermore, when searching for similar items, the system has to understand which are the attributes that make two garments similar, which may or may not be related to their physical appearance.

In order to train a system capable of automatically reason about fashion products, the ability to leverage large amounts of fashion data will be paramount. This data will include, in addition to pictures and videos, other types of meta-information such as categorical attributes, textual descriptions or human assessments. Processing this diverse "big data" will involve the development of advanced multi-modal machine learning algorithms, and making them scalable to large volumes of data. Likewise, discovering the relevant information, gathering it from online sources and organizing it into coherent datasets will be part of the work.



Generalitat de Catalunya  
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**Secretaria d'Universitats i Recerca**



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## EL PLA DE DOCTORATS INDUSTRIALS

The current revolution in computer vision, propelled by big data, GPU computation and new machine learning breakthroughs (especially Deep Learning), opens up many new applications which were previously unattainable. The LAMP group at the CVC is one of the leading groups in Spain on these technologies. It is involved in several projects (MINECO, CHISTERA) on fundamental research on these topics, as well as several Technology transfer projects (RETOS, industrial PhDs). This industrial project would allow Wide Eyes Technologies to directly apply the latest scientific advances in the field to develop innovative fashion applications.

Regarding the project planning, in a first stage the student will perform an in depth study of available machine learning techniques for visual search.

Also in this phase the student will work on data acquisition, and tools for automatic internet crawling and exploration of new meta data which can be automatically extracted from social media. The second phase will focus on developing algorithms for efficient visual search in large fashion data sets.

Special focus will be on category identification and attribute discovery techniques, keeping in sight the scalability with data set size, and computational cost that is essential for commercial deployment. At all stages Wide Eyes Technologies is interested in protecting the intellectual rights by means of patenting, or publishing results in international conferences.