Minor thesis document.

KTH Royal Institute of Technology

Company:*Vion Labs AB, Stockholm*

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Contents

1 Information

- Name : Nayan Singh Ravindra

- Track : Embedded Systems

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- Major thesis title - GPU cluster based brand logo detector in input video stream.

2 Internship

My internship work for the partial fulfillment of requirements for Master degree will be carried in a digital media technology based startup named Vion Labs AB, Stockholm. My internship work at Vion labs will be focusing on development of automatic brand logo detector in input video stream using cluster of graphical processing units.

Brand logo detector will be able to detect famous logos automatically from the input video stream and also will calculate effectiveness of the logos. Effectiveness measure of the logo will be measured based on position of the logo, size of the logo, visibility time and number of occurrences of the logo in an particular video stream.This parameter will assist the advertisement clip producers and marketing analysts to determine the effectiveness of the logo placement in video clip and determine the influence of logos in the video.

Automatic brand logo detector tool helps the embedded marketing analyst to place the logos in the process of placing brand logos in movies, ad clips and other videos.
Key contact persons at Vion Labs is

- Contact person: Mr. Arash Pendari (CEO)
  Email: arash@vionlabs.com

- Contact person: Mr. Chang Gao
  Email: chang@vionlabs.com

- Contact person: Mr. Abubakrelsedik
  Email: akarali@vionlabs.com

3 Major Thesis

Major thesis is closely coupled with the internship, it deals with the study of various algorithms related to image recognition, pattern recognition in the context of brand logo

detection. It uses qualitative approach of research to determine optimal algorithm from past research work for the task of brand logo detection in videos.

Further, research is carried out about accelerating detector on cluster of graphical processing units. It also deals with developing an effectiveness metric for detected brand logos in the video stream. The main purpose of master thesis is to determine the effectiveness of detected brand logo in movies and advertisement clips. Effectiveness measure is determined by the visibility time, position and size of the logos in the video stream. This information can be used by the producers to determine effective product placements in the video stream.

Key person contact information is as follows:

Key person	email information	Role
Professor Dr. Zhonghai Lu	zhonghai@kth.se	Examiner and Supervisor (KTH)
Mr.Abubakrelsedik	akarali@vionlabs.com	Supervisor (Vion Labs)
Mr. Chang Gao	chang@vionlabs.com	Supervisor (Vion Labs)

4 I & E Thesis

I am interested in following topics of I & E, such as marketing, business plan development and finance. I have interest in developing a business idea closely related to the product developed as part of my master thesis work. I am interested in investigating business prospects of the developed product. And also to perform research about current market situation and developments in the product domain.

I & E thesis is highly related with the master thesis and internship topic. I & E thesis will be focusing on developing and validating various business cases around the idea of brand logo detection in video stream. Most favorable and feasible business case will be opted for further research work. Feasibility of a business case will be evaluated based on the technical feasibility, lean strategy and lucrative opportunity it can offer.

5 Time plan

Time plan for this spring is as shown in the table below.

Item	Start date	End date
Internship and Master thesis	15/Jan/2015	30/June/2015
Minor Thesis	01/Mar/2015	15/May/2015

6 Describing the company:

Internship is carried out in a startup company named Vion Labs. Vion labs is a digital media technology startup which focuses in providing a state of the art, innovative and appealing product for movie enthusiasts in the form of movie recommendation engine. A recent study by eMarketer in USA expects that an US adults to spend around 5 hours 46 minutes of their time per day in getting involved in digital media [2]. As per movie on demand provider NetFlix, it has been observed that a average subscriber spends approximately 1 hour and 44 minutes streaming the video content [1]. From these studies it is clear that an average person spends most of his leisure time involving activities like watching movies, television and playing games in the digital world. Hence our startup Vion labs has been focusing in digital media market to target a large number of customers in this segment.

The method used for describing product or a service provided by a company is based on these following areas:

- Features : The stand out and most attractive features that company can offer in the product. The latest product of Vion labs is named as "Vionel", which is a website with a personalized movie recommendation platform. It has an appealing user friendly front end containing information about latest movies. It also has information about content providers, from where the users can get access to the video content. One of the attractive feature of Vionel is that it provides a social media type of platform to share personal views, likes and dislikes about a movie in the form of comments.
The recommendation engine assigns a rating percentage score based on the popularity of a movie, which helps the user to chose movies with highest ratings. The front end of the website provides the user with the option to list movies based on different genres, keywords and characters involved in the movies. The feature of searching movies based on the tags for eg. "adventure, action,comedy etc" is also a part of Vionel's frontend. Vionel provides its users with a lot of different dimensions of critically analyzing a movies. Future features to be included in the vionel website include relationship graphs among characters in the movies. Advertisement free website is one of the stand out feature of Vionel product, which creates a non-intrusive environment for the users to browse through movies. On the other hand Vionel provides an excellent platform for the partner companies and other movie franchises to advertise their movies in Vionel website.

- Advantages : The sustainable competitive advantage of the company's product compared to its competitors. Vionel is able to excel in the domain of providing accurate recommendations for movies unlike its competitors. The accuracy of the movies recommended for the selection of the user is currently not optimal by the recommendation engine of Netflix and other movie on demand service. Whereas the recommendation

engine of Vionel is able to recommend users with an appropriate list of movies based on one's choice. The main advantage of Vionel is that it provides an user friendly social media platform for discussing and sharing one's view about the movies and the characters in the movies.

The list of related movies for a movie provided by Vionel's recommendation engine is very closely related. The feature of bookmarking one's choice of movies and storing it in one's profile is a new feature in internet movie database websites and Vionel has this feature. Vionel provides the movie franchise owners to advertise their movies and trailer videos related to the movie. Vionel also provides the movie creators with the social advertisement platform to collect opinions about movies from the viewers.

- Returns for the customer : The current problems of the customer that is solved by the service or product. Vionel provides its customers with a free website to enrich their movie selection experience. It provides with a personalized movie recommendation website with personal bookmarks of movies and also pointers to where the users can access the movie content. It also provides a user friendly social environment to discuss one's views about the movies. The website provides a one stop solution for all the movie enthusiasts to ponder upon latest content in the entertainment world and stumble upon the movie to watch in lesser time than searching in internet. Vionel provides the movie creators and its advertisement agencies to showcase trailers or teasers of the movies and also to collect valuable opinions and general public comments about the movies.

Framework of innovation process of a new product or service provided by startup consists of three stages, namely conceptualization of the new product, development of working prototype of the product and the last phase is regarding commercializing the developed product. Vionel product is in the beginning of commercialization phase of frame innovation process.

7 Research question

Currently Vionel as a product is in the market launch phase and hence there is a need for market research in order to attract users in large amount to visit our website. Since our product is a website, process of marketing and creation of brand awareness is highly benefited by online marketing strategy. Even though there exists a number of other marketing strategies such as word of mouth, direct marketing and others. In the area of online marketing, impact and use of social media is pivotal. The use of social media for this purpose enables the marketing team to reach out a larger audience in an effective and time efficient manner. On the other hand, Vionel product benefits from the internship work of automatic brand logo detection in movies to generate tag or category of movies namely "Movies with

product placement". Further this tag is used to provide better suggestions for the users of Vionel.

Tasks or research needed for the study :

- Detailed competitor analysis in the market of movie recommendation engines.

- Identification of features that make a recommendation engine reliable and attractive to the user.

- Research about new ideas that can be added as features to the movie recommendation engine that will be beneficial to the users.

- Internet based research to collect information about the most popular movie recommendation engine in the current market and the reasons for the same. This research task will assist future development of Vionel product by providing healthy criticism as compared to its competitors.

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References

[1] *How Much Time Do Viewers Really Spend With Netflix? (NASDAQ: NFLX) - 24/7 Wall St.* http://247wallst.com/technology-3/2014/09/29/how-much-time-do-viewers-really-spend-with-netflix/. (Visited on 04/04/2015).

[2] *Mobile Continues to Steal Share of US Adults' Daily Time Spent with Media - eMarketer.* http://www.emarketer.com/Article/Mobile-Continues-Steal-Share-of-US-Adults-Daily-Time-Spent-with-Media/1010782. (Visited on 04/04/2015).