

Introduction

Problem

Many of us have been in a situation where we find ourselves in a new or unfamiliar place, searching for somewhere to dine with our family and friends. With the ever growing chain of restaurants and take-outs, it's sometimes quite difficult to know where to go and what to eat.

Solution

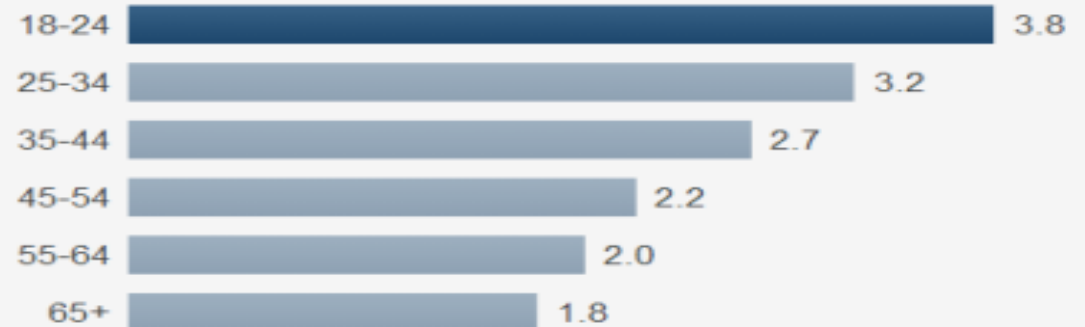
To solve this occurring problem, we decided to design an app called “**Identifier**” made specifically for the Google glasses. The app will allow users to identify any restaurants nearby as well as search for restaurants within walking distance. The main goal of this app is to quickly and efficiently find a place to dine which suits both the user's needs and wants

Users

From our research and conducting interviews and surveys, we decided that that our targeted age groups will be the 20's to 35's, so mainly university students and young business workers. This second graph below was taken from a google consumer survey and shows which age group will most likely buy google glasses or own a pair already; as you can see, ages 18 to 34 shows the highest results. According to the Gallup website, 28% of Americans eat out at least once a week and 33% would eat out up to twice a month, there fore our app can prove to be of use to these population.

How often, if ever, do you eat at fast food restaurants, including drive-thru, take-out, and sitting down in the restaurant -- every day, several times a week, about once a week, once or twice a month, a few times a year, or never?

	Every day	Several times a week	About once a week	Once or twice a month	A few times a year	Never
	%	%	%	%	%	%
Jul 20-14, 2013	3	16	28	33	15	4
Dec 8-10, 2006	3	20	33	25	15	4
Jul 7-9, 2003	4	17	31	30	13	5



Background Research - Google Glasses

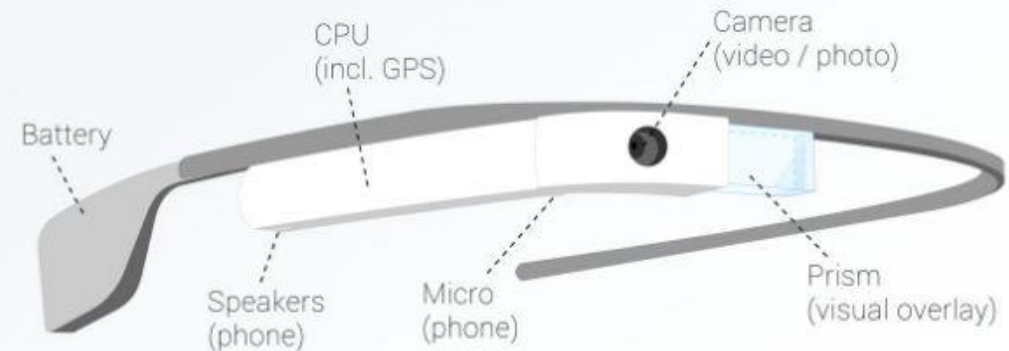
What is Google Glasses?

Google Glasses are smart devices which acts as a wearable computer or phone. It uses a transparent head mounted display to show information similar to a hands free smartphone. Users operate this device through voice commands to control a variety of applications that might require an internet connection such as Google maps. Other applications includes ability to record and take photos, send messages, take normal and video calls and many more.

How Google GLASS works

Why can you see a sharp image?

Infographic by M. Missfeldt
www.brille-kaufen.org



How does it work, what are the features?

The user interface is also quite simple, with the home screen displaying the time in a transparent box, positioned in the centre of your vision; with the wallpaper being the environment around you. The dominant voice command and touch interface allows the user to navigate the glass' functions with ease. The google glasses has a built in GPS system as well as a translation tool, so you'll never get lost. One of the key features is that the glass always know where you are and what you're looking at, at all times; this means that it can anticipate the users' needs in order to send only relevant information.

GLASS



Background Research

Location Based Service (LBS)



LBS is a popular mobile feature which utilizes GPS positioning to offer the user different information and services dependent on their location. For example, it has the ability to constantly locate the user's current location and offer directions to their destination in real time. LBS usually allows users to 'Check in' at various point of interests (POI) and these POI (restaurants in this case) are the main keywords when searching through data online. Data obtained through social media streams such as twitter can sometimes be more accurate than official data when it comes to opinions and recommendations so the user can eat locally instead of falling into tourist traps.

Identify is at its core a LBS that identifies a POI then process and provide information on it from either its own database or online through social media streams. Thus, connecting it through a social media account such as Google+ is highly recommended to provide and generate accurate data.

Influences and Inspirations



CamFind

Our inspiration came from existing apps which relates to 'scan and search' as well as photo recognition. One such app was 'CamFind' which allows users to capture photos of an object, for example a cup of coffee, and identify what it is by searching the web for matching results. The app can also tell you where you can buy that certain item, so if the cup of coffee has a 'Starbucks' logo printed on, the app will match this image with ones found in the online database.

ScanLife

Another app which influenced us was the 'Scan Life'. It's quite similar to the 'CamFind' app but its prime function is to scan barcodes and QR codes rather than photos of objects. This app targets both the consumer and upcoming companies who wants to customize their own QR codes or Barcodes. The app can link the users to promotions, coupons, catalogues, app downloads and surveys



NameTag



'NameTag' is a facial recognition app and it allows the user to photograph strangers and find out who they are by comparing the photo to millions of online records and social media profiles such as Facebook, Twitter and Instagram. Developed by 'FacialNetwork.com' it is currently available for iOS and Android devices and soon to be available for the Google glasses. The app was developed for safety and its main purpose is to be used to scan your date you've met online, for any past criminal offences. Its other prime function is to scan new friends and to make exchanging numbers and facebook etc, more quickly and easily.

Billy Marinos

Name

24

Age

Male

Gender

Uni Student

Occupation

Greek

Nationality

Normal User

Latent Needs

- A place to eat during his uni breaks
- Must be close by
- Quick and easy
- Doesn't want Greek food as he eats it everyday at home

Explicit Needs

- GPS should only show restaurants within 5-10mins walking distance
- Lead him to places which provides take-away and quick service
- No Greek restaurants recommendations

Extreme User

Latent Needs

- Enjoys a peaceful atmosphere
- High quality food
- Permission to take photos for work
- Hates fast food

Explicit Needs

- Do not recommend him crowded restaurants
- Show him only 4 – 5 star places
- Block out fast food shops
- Provide contact details so he can ask permission to take photographs

Name

Cedric Giles

Age

33

Gender

Male

Occupation

Food Photographer

Nationality

French

Implementation Requirements

Analysis



❑ Identify problem and determine possible solutions.

- ✓ It's difficult to search for good restaurants nowadays when away in unfamiliar places. Hence the raising popularity of restaurant finding applications and websites in order to fulfil this need.

❑ Research target audience.

- ✓ According to the survey, the most likely age group to eat out are 18-35. Basically university students and young businessmen that doesn't have time or a family to make home cook meals.

❑ Determine goals.

- ✓ The goal is to develop an interactive application which identifies restaurants to assist people in deciding where to eat. It should be able to search for nearby restaurants and provide general information about them.

❑ Decide on method of delivery.

- ✓ Google Glass is decided to be the best smart wearable for this type of application because of the ability to easily scan restaurants with its camera and to create augmented realities when providing GPS directions.

❑ Roles needed at this phrase.

- ✓ Project manager, Instructional Designers, Subject Matter Experts

Design



❑ Define content.

- ✓ It needs to show general information such as restaurant name, type, cost, address, opening hours and contact details. Menu, photos, ratings and reviews are optional but highly recommended if available.

❑ Define interaction and navigation.

- ✓ The application will be fully voice commanded, although there is a touchpad on the side that can also be used when selecting things.
- ✓ The general process is "Ok glass, Identify" > Camera activates and scans restaurant then return information. Secondary function is "Ok glass, search restaurants..." > activates GPS to locate and return nearby restaurants > "Select 'Restaurant name'"/scroll through touchpad to highlight one > provides information.

❑ Create wireframes.

- ✓ Simple layouts of the application are created filled with dummy content to flesh out its navigation as well as an overview of what it'll roughly look like with colour schemes.

❑ Roles needed at this phrase.

- ✓ Project Manager, Instructional Designers, Graphic Artists, Subject Matter Experts

Implementation Requirements

Develop



❑ Create working prototype.

- ✓ The final design/wireframe is decided and the application will be fully programmed with actual data/information.

❑ Obtaining real data/content.

- ✓ There are two ways to obtain real data. Firstly creating a new database or use an existing database such as Eatability. It's decided to use a mixture of both so when data isn't available in our database, it can search beyond into other database or the internet. Our database will be mainly user generated and consists of information the user contributes by using the application.

❑ Create tests and getting feedback.

- ✓ Users are hired to test out the application to make sure everything works properly without any bugs as well as gather feedback to evaluate and possibly redesign if not feasible.

❑ Roles needed at this phrase.

- ✓ Project Manager, Programmers, Graphic Artists, Writers, Editors, Testers

Implement



❑ Delivery of the application.

- ✓ This application is free and released on the Google store to be downloaded strictly for Google Glass only in order to fully utilize all its features and functions.

❑ Create supportive documents or provide additional training/support.

- ✓ Instructions, tutorials, FAQ and general debugging documents are created in order to help users learn and use the application properly.
- ✓ Helpdesk support services are also hired to assist users with any problem they encountered while using the application. If major bugs are found, it will be sent to the developers to be fixed and a patch released.

❑ Roles needed at this phrase.


- ✓ Project Manager, System Administrator, Communication Specialists

Discussion

↘ Data availability

It is apparent even with the existing restaurant search applications that not all restaurants have information available on the internet and hence, the good ones are called rare finds only known through recommendations. But how do we know they are good if there's no information available? User generated content is highly encouraged to fill in these gaps where no official information is available but how do we determine whose data should be used? This leads to the next problem of,

[illegible]



➤ Data accuracy

There are so many information on the internet that it takes time to determine which is useful or accurate. Even official data can contain mistakes or undergo changes that needs to be updated. Constant reviewing is time consuming and thus, peer review such as a like system should be implemented to determine popularity and hopefully accuracy, assuming that the more people like a comment or review, the more accurate and agreed upon it is.

Scanner efficiency

The identify/scanning system is based on facial recognition except, it determine words like the restaurant name then match them with the user's current location from the GPS to search and identify the current restaurant. However there are implications that could affect the results since this system heavily depends on specific requirements such as a clear shot of the restaurant name or accurate GPS location. What happen if the scanner identify the name wrong or the GPS location wasn't accurate? The application needs to be smart enough to associate restaurants with a similar name in the approximate location of the GPS similar to google suggestions when the search term contains a typo.

Scanner efficiency

The identify/scanning system is based on facial recognition except, it determine words like the restaurant name then match them with the user's current location from the GPS to search and identify the current restaurant. However there are implications that could affect the results since this system heavily depends on specific requirements such as a clear shot of the restaurant name or accurate GPS location. What happen if the scanner identify the name wrong or the GPS location wasn't accurate? The application needs to be smart enough to associate restaurants with a similar name in the approximate location of the GPS similar to google suggestions when the search term contains a typo.

Process



Concept Design

The above image was our initial design for our 'Identifier' interface but we learnt from feedback that it was too cluttered and confusing for the user to use. We also aim to include multiple functions such as opening a preview of the restaurant's menu if available, top reviews of the restaurant, check in and check out as well as being able to log in to save down favourite places. In our rough designs, we wanted this app to include multiple options to cater for all needs by relying on the glasses' voice command and built in GPS.

Interviews

We conducted a range of interviews and surveys and noticed that a handful of families and individuals would eat out at a restaurant or fast food place at least once a week and is willing to spend roughly \$10 - 15 per person. We also realised that they would usually enter a restaurant which was closest to their study or work place and prefers somewhere with a graphical menu displayed on the exterior of the restaurant or located nearby.

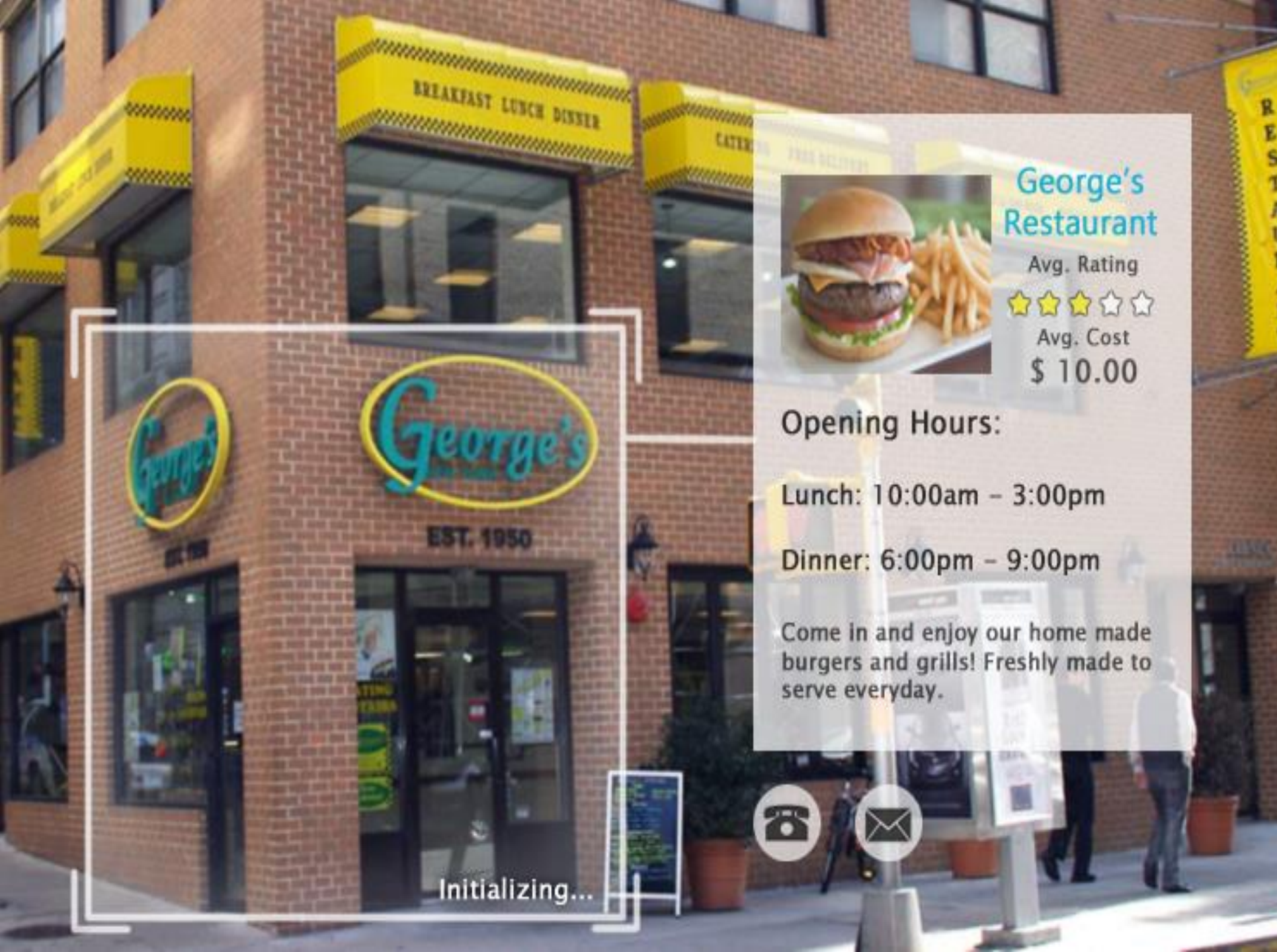
Final Concept

The final design concept and prototype came down to removing a lot of the unnecessary functions such as searching for available menu, reviews and a login system as they would confuse the user and clutter the home screen. We focused on the inbuilt GPS, google map search and wi-fi positioning in order to direct the user to their destination. We went back and analysed the typical Google glass interface and decided to change our app to fit theirs. In the end, 'Identifier' utilises an opaque white box to display only relevant information similar of that to Google glasses' augmented reality functions.

Final Prototype

Identify Interface

The boot up screen of 'Identifier' will consist of a white opaque box in the centre of the user's vision, similar of that to the photo and video option available on the Google glasses. After the user takes a photo of the chosen restaurant , it will respond with "initializing" on the bottom corner of the square, the search will then be matched with online data and return any relevant information. Another white box will replace the photo capture function which will display the restaurant's name, average cost and rating, opening hours and a quick overview of what they serve. A phone and message buttons are shown beneath the information box which allows you to use the glasses' call function to directly contact the restaurants for any bookings or inquiries.



George's Restaurant

Avg. Rating



Avg. Cost

\$ 10.00

Opening Hours:

Lunch: 10:00am – 3:00pm

Dinner: 6:00pm – 9:00pm

Come in and enjoy our home made
burgers and grills! Freshly made to
serve everyday.



Initializing...

Final Prototype

Search Interface

The search interface will utilise Google glasses' GPS, wi-fi positioning and map function. This method of searching is useful for locating any restaurants nearby and within walking distance. The app will list the available restaurants relevant to the user's search and once an option is selected, the interface on the left will pop up. The human pictogram means that the user is traveling on foot; this option can be changed through voice command, such as "Ok glass, I'm travelling by car". The best route is chosen for you based on the distance travelled and the amount of time taken to get there. This design ties in with Google glasses' original map tool.



Future Work and Conclusion

So, What's Next?

Whether you're looking forward to trying new restaurants or just searching for places around you now and then, this application proves to be useful and has a lot of potential to be expanded in the future. As technology advances, the scanning system can be improved greatly, allowing 'Identifier' to search and identify a great range of products, such as instant meals, ingredients for a recipe and much more. There are great opportunities for the app to branch into the super market industry as it can allow users to easily search for products, new and old. The app will continue to utilise the in-built GPS to track the user's location as well as new recognition software in order to analyse and return the user with relevant and correct information.



Conclusion

In conclusion, through our research and analysis of existing technology, we are able to design a prototype application called 'Identifier', made specially for the Google glasses. We believe that 'Identifier' will be a new and innovative way to experience augmented reality.

References

- Balduinia, M., Celino, I., Dell'Aglio D., Valle E. D., Huang Y., Lee T., Kim S. and Trespc, V. (2012). BOTTARI: an Augmented Reality Mobile Application to deliver Personalized and Location-based Recommendations by Continuous Analysis of Social Media Streams. *Web Semantics: Science, Services and Agents on the World Wide Web*, vol 16, November 2012, pp 33–41
- Google Glass. *Google*. Web. <<http://www.google.com/glass/start/>>.
- Design Principles. *Google*. Web. <<https://developers.google.com/glass/design/principles>>.
- Tepper, Rachel. (2013) 8 Out Of 10 Americans Eat Fast Food At Least Once A Month. *The Huffington Post*.
- 15 Percent of Americans Willing to Pay \$299 for Google Glass. *Glass Almanac*. Web. <<http://glassalmanac.com/15-percent-us-willing-pay-expected-google-glass-price-study/1855/>>.
- Kruse, K. (2002). Introduction to instructional design and the ADDIE model. *Retrieved January, 26, 2005*.
- Schiller, J., & Voisard, A. (Eds.). (2004). *Location-based services*. Elsevier.
- Wang, R. Y., & Strong, D. M. (1996). Beyond accuracy: What data quality means to data consumers. *J. of Management Information Systems*, 12(4), 5-33.
- Vasilescu, M. A. O., & Terzopoulos, D. (2002, August). Multilinear image analysis for facial recognition. In *Pattern Recognition, International Conference on* (Vol. 2, pp. 20511-20511). IEEE Computer Society.