Capstone Project Proposal

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Business Goals

Project Overview and Goal What is the industry problem you are trying to solve? Why use ML/AI in solving this task? Be as specific as you can when describing how ML/AI can provide value. For example, if you're labeling images, how will this help the business?	Real Time Face Recognition Industry problem that I try to solve is automate real time detection and identifying people faces / gender. Use ML/AI to monitor large amount of people in places at the same time will increase the security on Important places such as banks, museums, or very crowded places like airports. Also, it will help to control employees' or visitors' access.
Business Case Why is this an important problem to solve? Make a case for building this product in terms of its impact on recurring revenue, market share, customer happiness and/or other drivers of business success.	Each bank spent a lot of many to provide best security control devises like cameras, body scanners, etc.… with traditional security control it is need full concentration on cameras screens by security men to avoid any fraud potential or to monitor bank entrances and areas with high protection and privacy which apt to human errors and security breaches. By building this product, monitoring bank entrances and areas will be easy and fast, Security control will be more efficient and accurate and retrieving faces data becomes more ease and effectiveness without human errors. This will add customer confident and satisfaction value to the bank and make good reputation.
Application of ML/AI What precise task will you use ML/AI to accomplish? What business outcome or objective	ML/AI will be used to detect, and track people faces and gender throw cameras. Also, it will be used to determine employee's authentication at high security areas. So, a real time alert will be raised if there any security breaches or unauthenticated stroll. All faces configuration data will be displayed on monitor

will you achieve?	screens and stored for further used. ML/Mi will achieve entrance and border control, access control, security, and surveillance in customer areas, attempts detection of hack or unauthorized movement.

Success Metrics

Success Metrics What business metrics will you apply to determine the success of your product? Good metrics are clearly defined and easily measurable. Specify how you will establish a baseline value to provide a point of comparison.	Low number of security alerts from deployed product is an indicator. also, it could be compared regularly with actual security breaches, And I can compare it with actual number of previous stats of security breaches. It will also increase customer confidence in the safety of the place.

Data

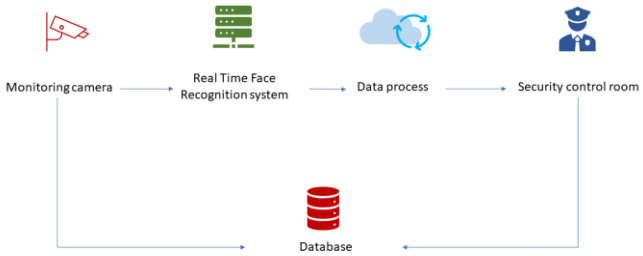
Data Acquisition Where will you source your data from? What is the cost to acquire these data? Are there any personally identifying information (PII) or data sensitivity issues you will need to overcome? Will data become available on an ongoing basis, or will you acquire a large batch of data that will need to be refreshed?	At the beginning I will use free data recourses for our first product prototype. The other choice is collecting data by myself to cover most real-world scenarios and annotate the data using figEight. Initially there is no PII, but recording people faces is a sensitive matter, so all needed preemption and approvals is considered. The product mostly will use real time video stream so, data will be available on ongoing basis.
Data Source	Biases that could be built at the data are gender, skin tone, deferent brightness levels of the place, closed or

Consider the size and source of your data; what biases are built into the data and how might the data be improved?	opening areas, any face, or head accessories (glasses or hat etc...) and deferent faces angles. All these biases would affect product efficiency and accuracy so, I will make sure to balance data biases to get best face recognition tool that recognize people faces with most common scenarios
Choice of Data Labels What labels did you decide to add to your data? And why did you decide on these labels versus any other option?	Decided labels are (Women, Man, Unknown, No Human), those labels help to find if there human at this moment, if it's true, gender should be figure out, and the unknown label for uncertainty.

Model

Model Building How will you resource building the model that you need? Will you outsource model training and/or hosting to an external platform, or will you build the model using an in-house team, and why?	Google Auto ML is good choice to build prototype model. initially collected data from free academic resources and photographed personally will be used to train the model. In reference to metrics, the model performance will be observed to decide improving opportunities of model's efficiency, until the model get acceptable outcomes. After that, in-house team will begin building model prototype previous model to make sure all product feature will be customized and improved to fit our case.
Evaluating Results Which model performance metrics are appropriate to measure the success of your model? What level of performance is required?	Common metrics going to be using to measure success like F1. Because identifying people faces should be fully accurate, F1 value should be high so, acceptable range is from 0.97% to 1%.

Minimum Viable Product (MVP)

Design What does your minimum viable product look like? Include sketches of your product.	
Use Cases What persona are you designing for? Can you describe the major epic-level use cases your product addresses? How will users access this product?	Could be used into banks to secure it's building from unauthorized access and Identify people who might do some security breaches. Also, Museum could use it to detect any unusual movement or any stealing attempts.
Roll-out How will this be adopted? What does the go-to-market plan look like?	By Test final prototype and evaluate its result. will build up the product for pre-launch stage. Once all needed tests and metrics are compatible with market requirements, will proceed to launch stage, by regularly monitoring product performance and continuously improvements with customer feedback, new feature will be added and maintain any upcoming errors.

Post-MVP-Deployment

Designing for Longevity How might you improve your product in the long-term? How might real-world data be different from the training data? How will your product learn from new data? How might you employ A/B testing to improve your product?	In long-term improvement, I will consider add new features in face recognition system like age estimation, high image resolution or develop types of alerts and connected to police directly. Data in real-world is varied like number of people on one frame, very crowded places and different culture costumes will be a challenge for detecting people faces. Train the model on new data by train new model using 80% data from old model and 20% of the new data. After check all metrics old model will e replaced by new

	train one to keep good performance and make happy customers.
Monitor Bias How do you plan to monitor or mitigate unwanted bias in your model?	Mitigate unwanted biases by first identify them all and plan to remediate based on business needs. Then, select most unwanted biases and see the cause of the bias. After that I will collect data from new resources that helps to solve model biases. Keep train the model and keep human part of the loop.