



Crown Identification

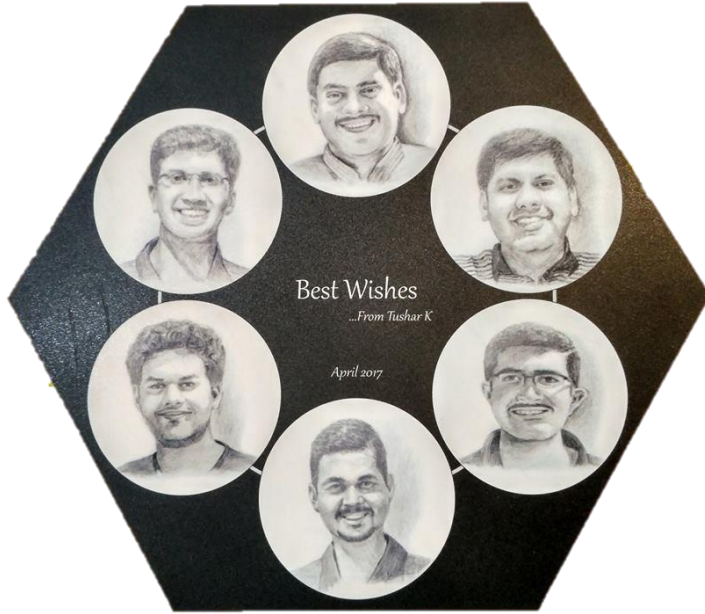
Tushar Kulkarni

Machine Learning Engineer Intern

Master of Science Student at UC Irvine

Mentors

Sergei Azernikov, Andrey Gubenko, Chih-Chun Lin



Interesting facts about me?

Well...

75% - 80% introvert

Designing

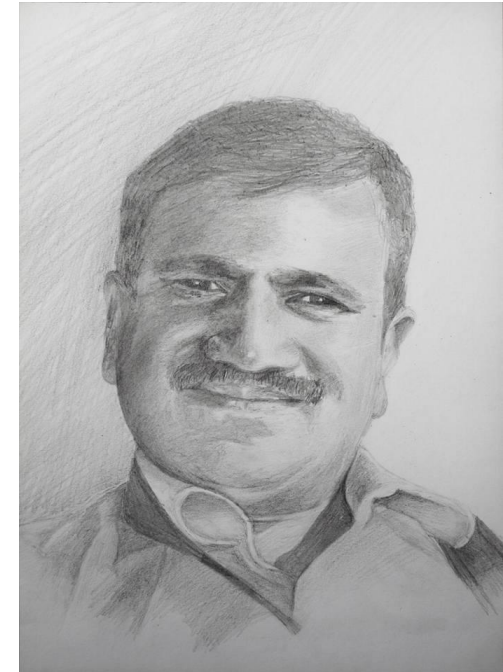
Sketching, Drawing, Painting

Photography

Travelling, Hiking

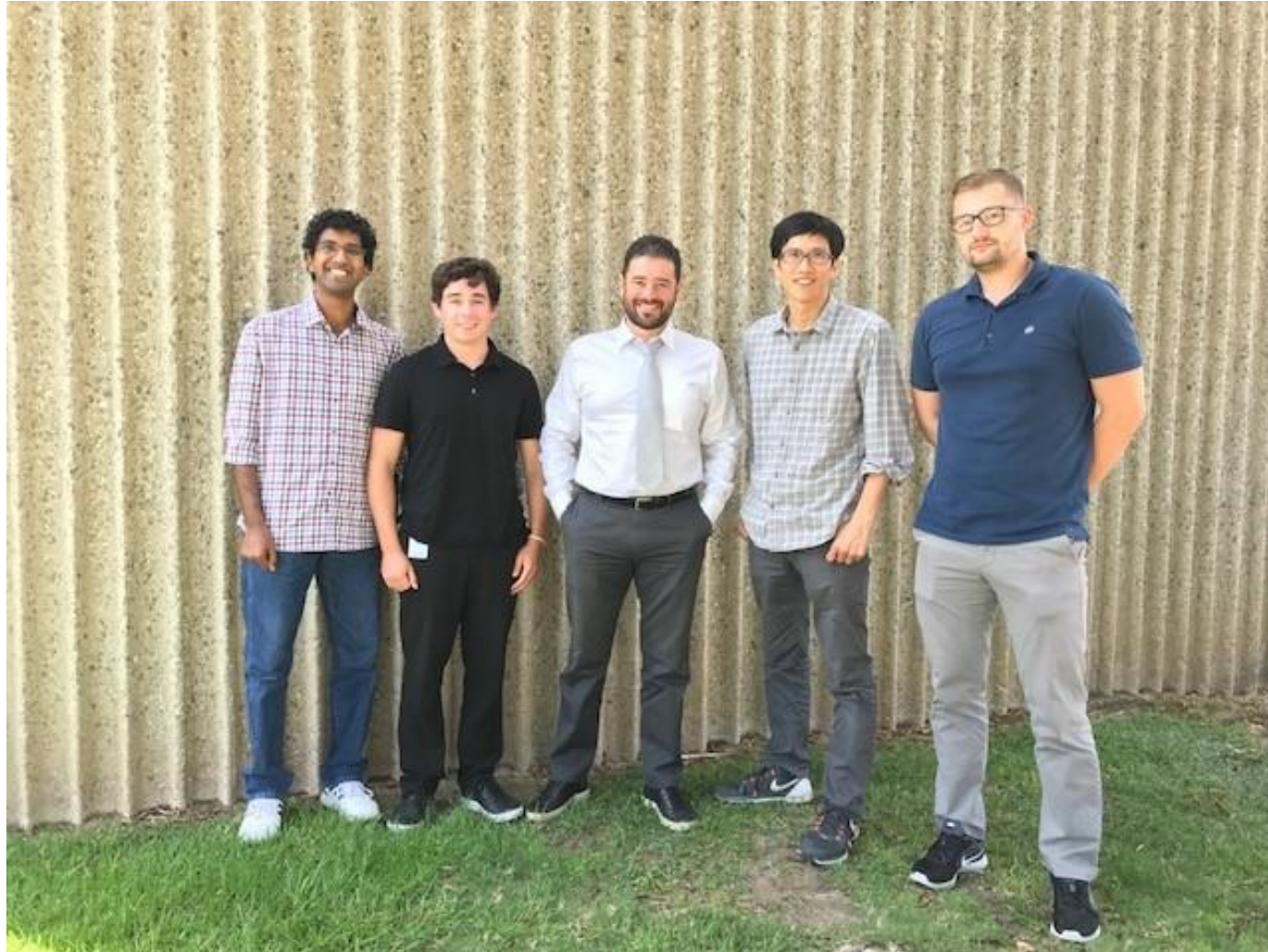
Books

Computer Science





My Team – Machine Learning



Credits: Gavin Goddard



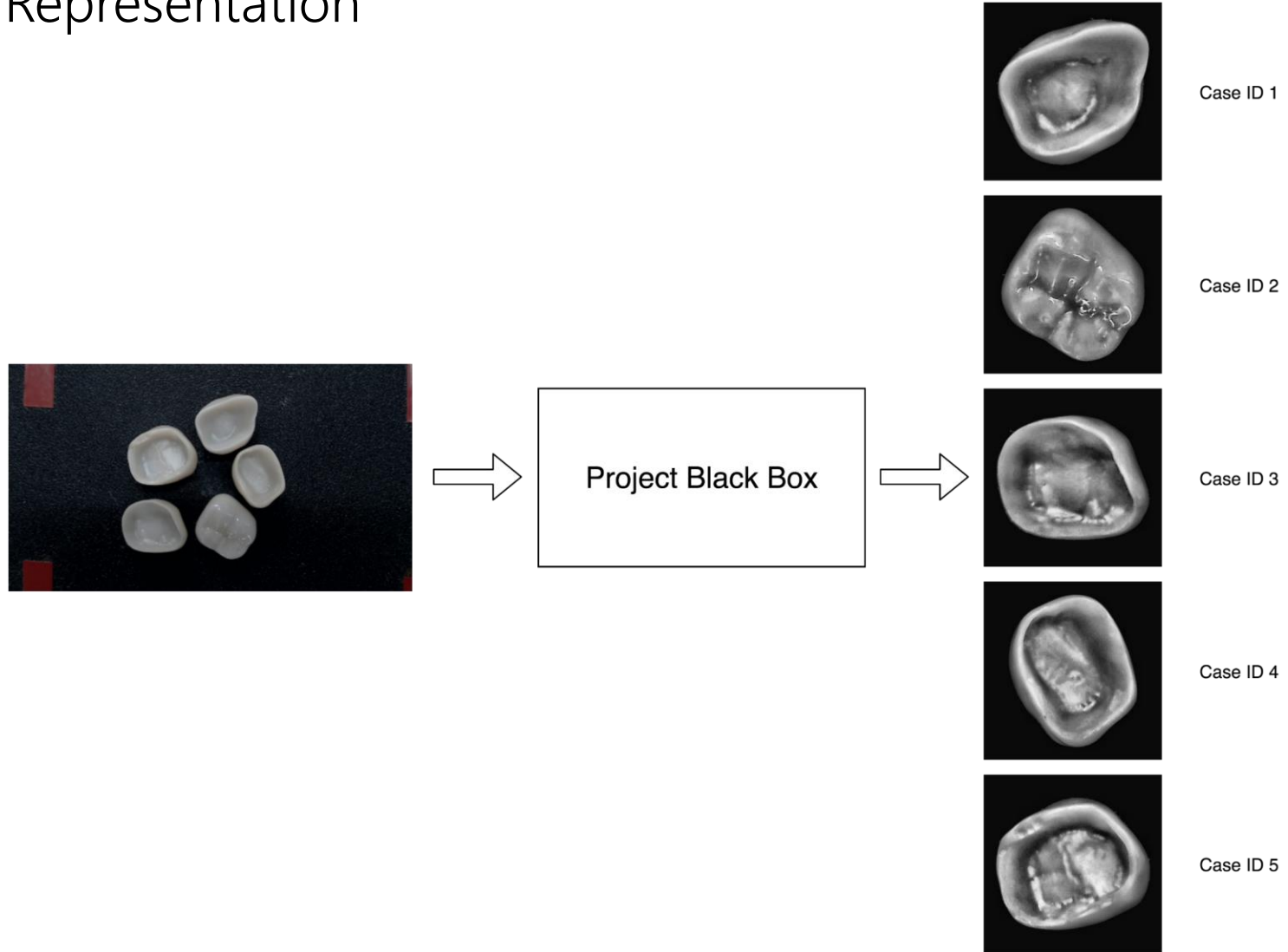
Some things I can't explain right now...

Due to time limitation

...I will refer to them as Magic!



Black Box Representation



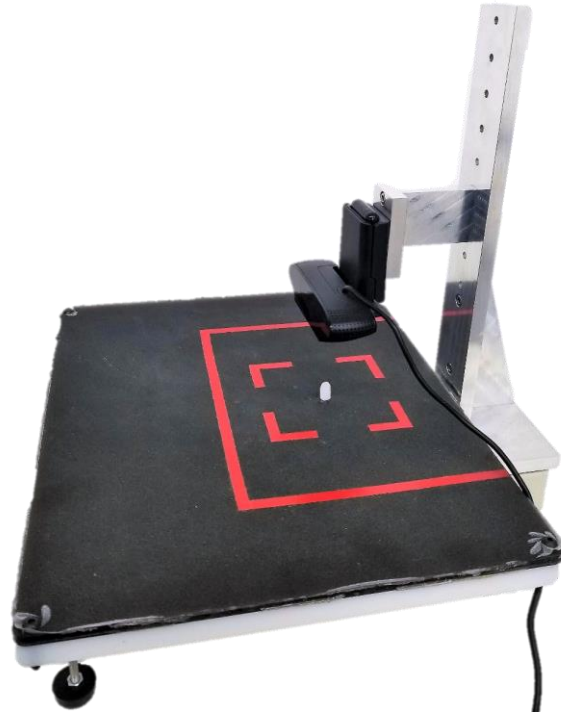


Why do we need this system?

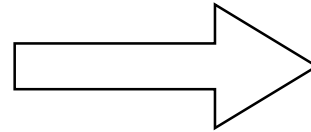
- Fast identification of unknown crowns
- No dependency over other external identification methods
e.g. Barcode, RFID, Text Labels

Why Machine Learning and Computer Vision?

- Removes redundant information
e.g. color, contrast, perspective, lighting (to certain extent)
- Recognizes patterns in crown rather than actual crown (features)



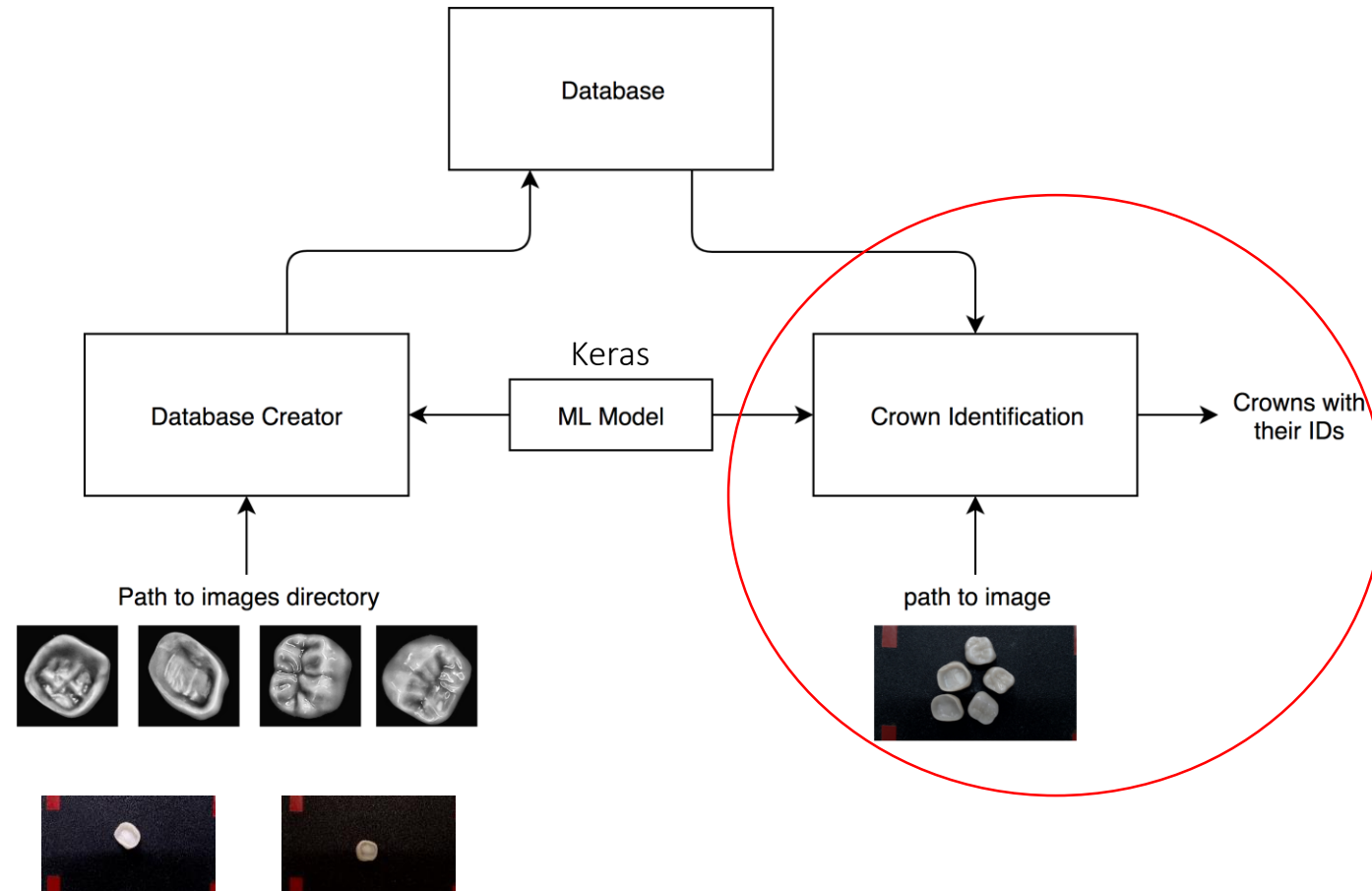
Project of Andrey Gubenko





Block Diagram

A lot of magic happens here...





Crown Identification

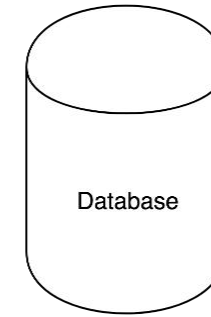


Image
Preprocessing

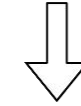


ML Magic

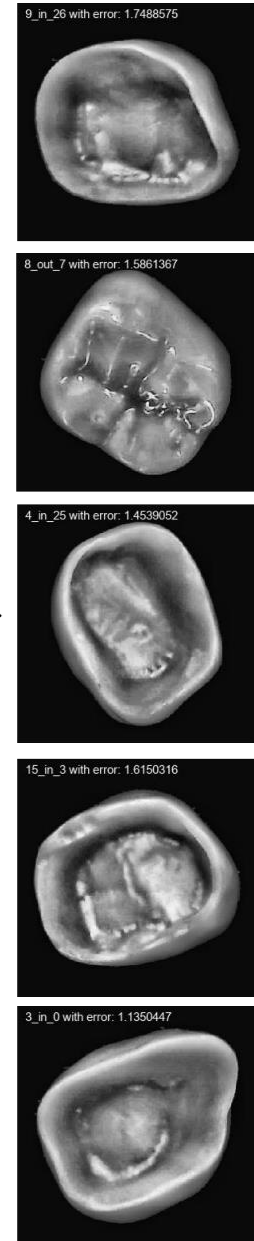
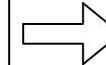
Feature Vectors
Some magic numbers



Database



Comparator/ Error Calculations



Crown Images with
correct IDs



Let's look at a demo



What I learned?

- Teamwork and individual contribution
- Practical application of my knowledge
- Deal with undesirable factors that makes the system unstable
- Worked from data collection stage to deployment ready system stage



Thank you