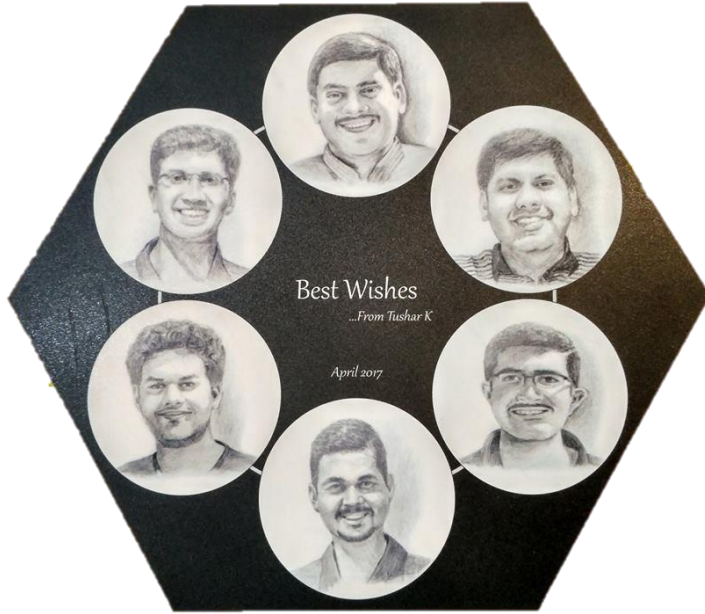# Crown Identification

Tushar Kulkarni
Machine Learning Engineer Intern

Master of Science Student at UC Irvine

Mentors
Sergei Azernikov, Andrey Gubenko, Chih-Chun Lin

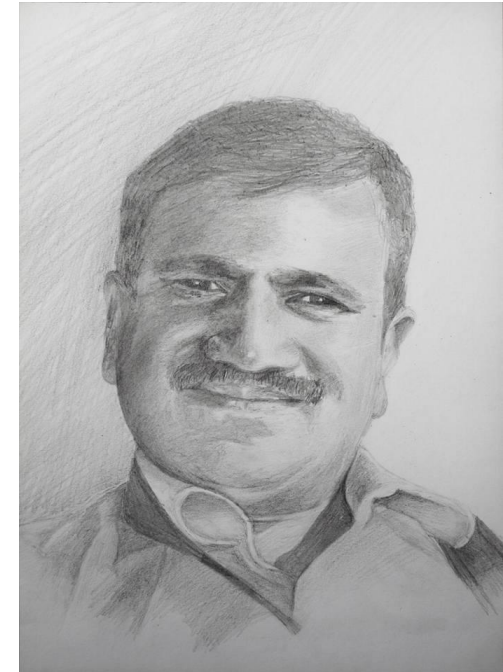## Interesting facts about me?

Well...

75% - 80% introvert

Designing

Sketching, Drawing, Painting
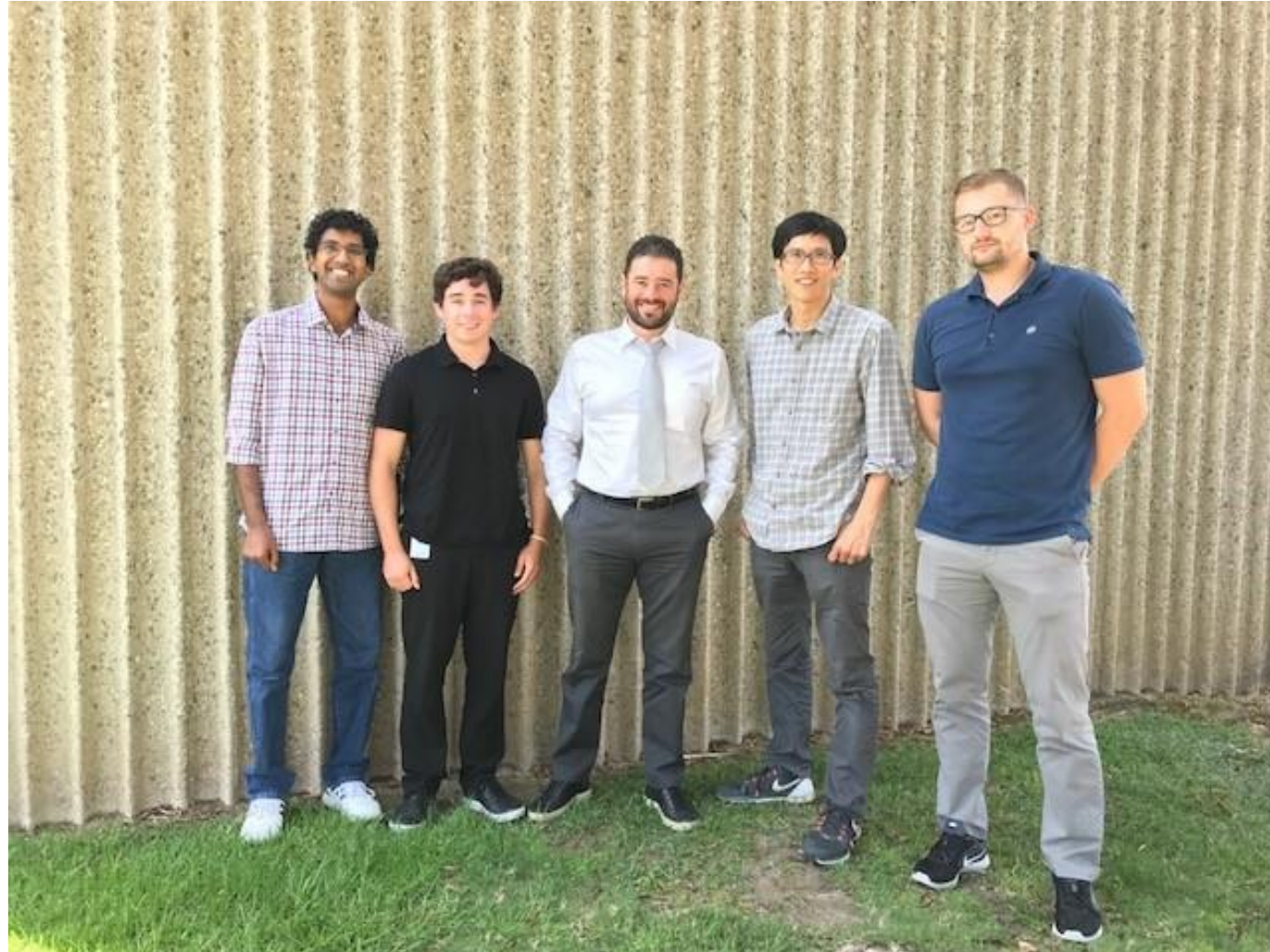
Photography

Travelling, Hiking

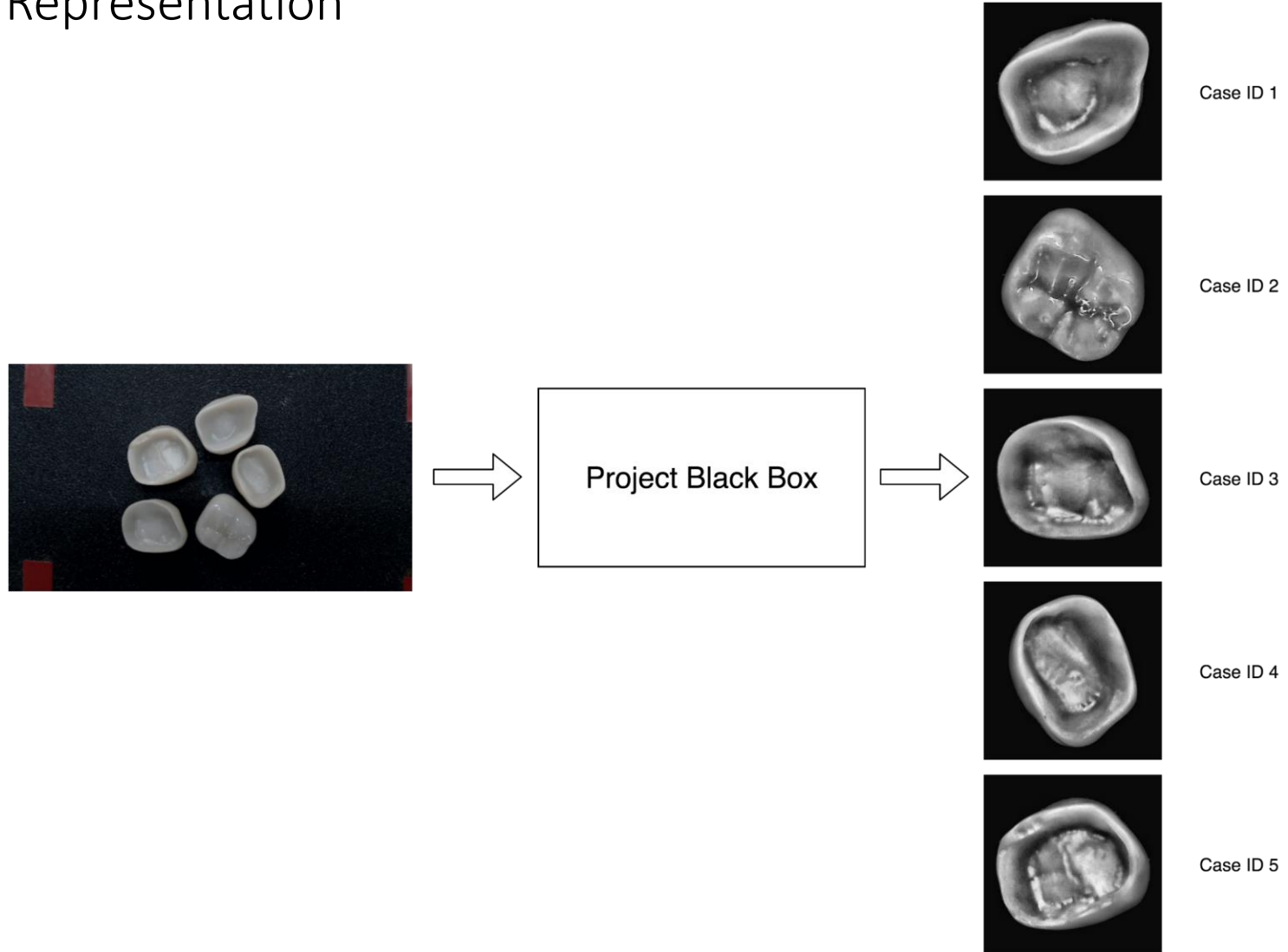Books

Computer Science

My Team – Machine Learning

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

Due to time limitation

...I will refer to them as Magic!

Black Box Representation

Project Black Box

Case ID 1

Case ID 2

Case ID 3

Case ID 4

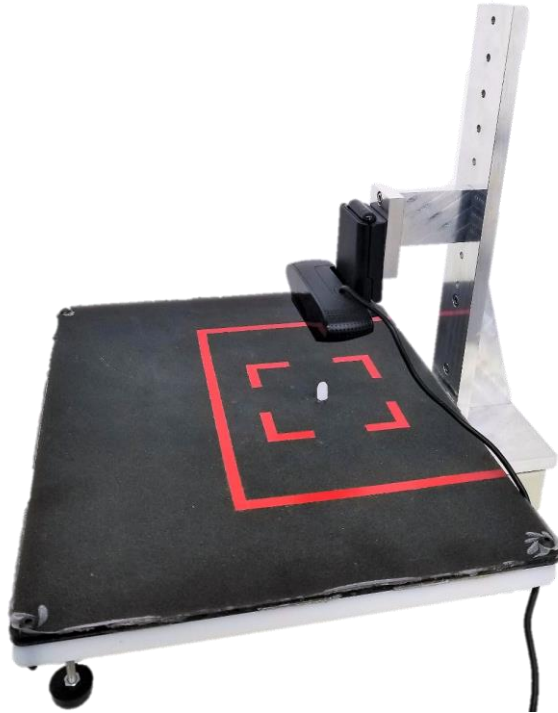Case ID 5

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)

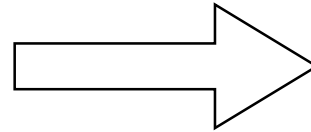- Recognizes patterns in crown rather than actual crown (features)

Taking photos

Project of Andrey Gubenko
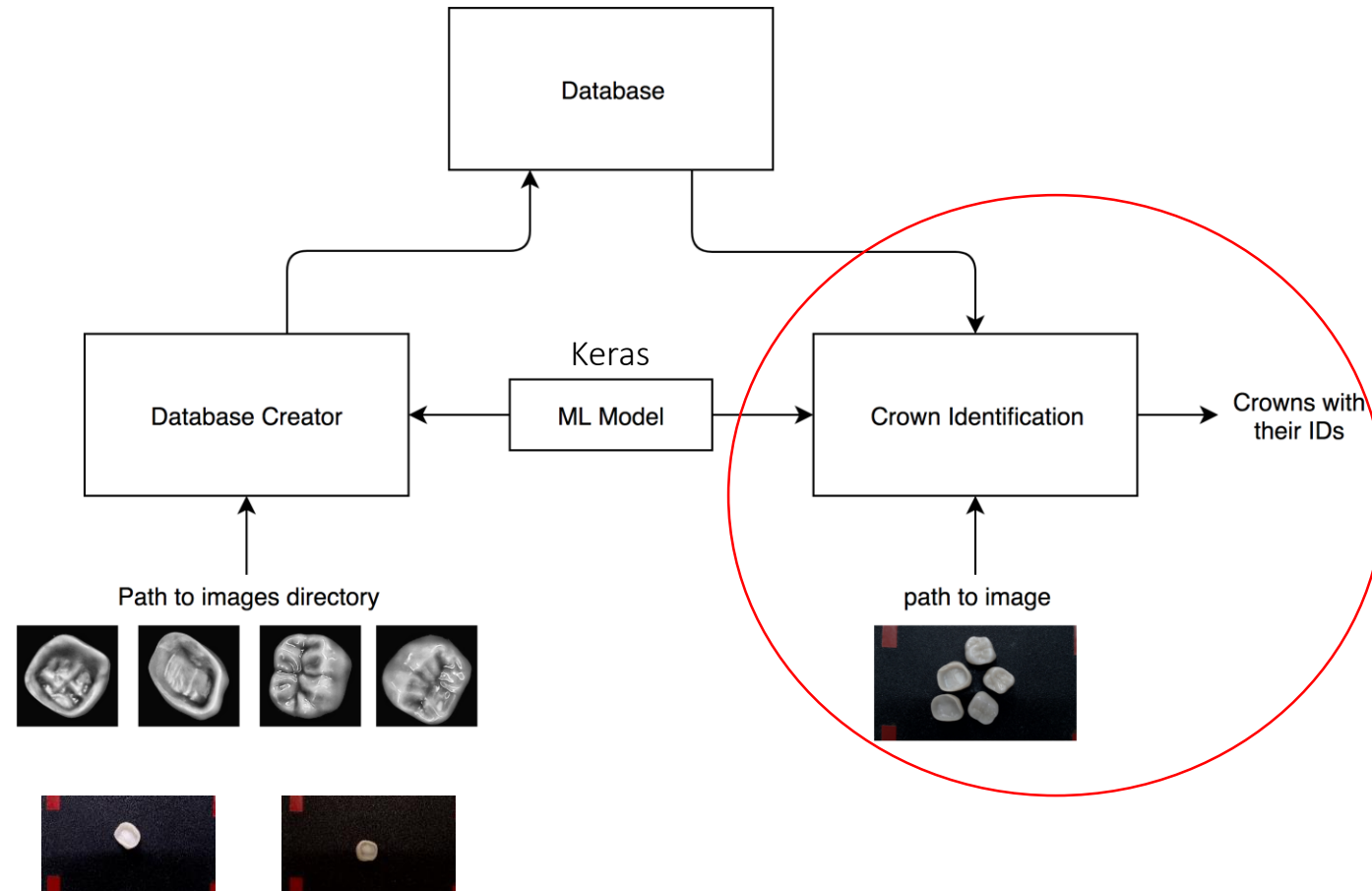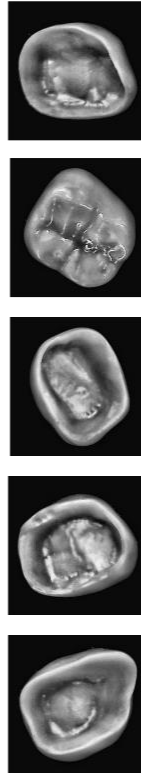
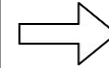# Block Diagram

A lot of magic happens here...

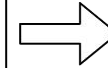# Crown Identification

Image Preprocessing → ML Magic → Feature Vectors (Some magic numbers) → Database → Comparator/ Error Calculations → Crown Images with correct IDs
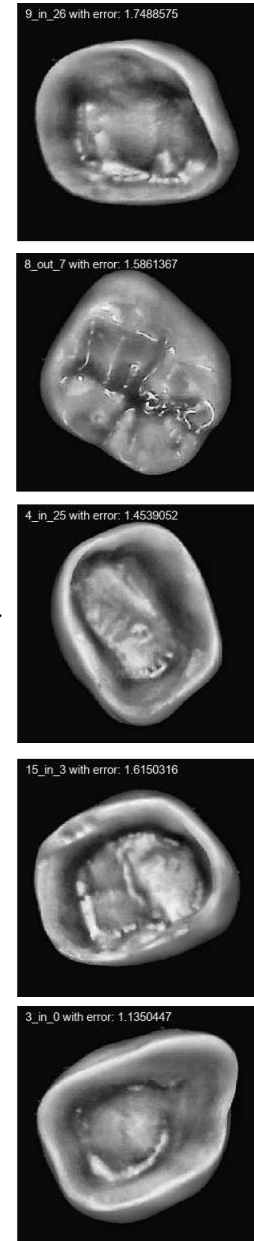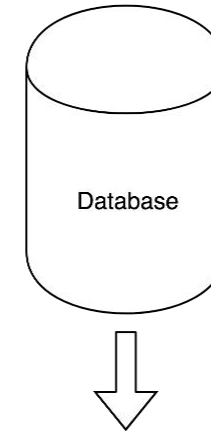
9_in_26 with error: 1.7488575

8_out_7 with error: 1.5861367

4_in_25 with error: 1.4539052

15_in_3 with error: 1.6150316

3_in_0 with error: 1.1350447

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