

Workshop 3: JCSSE2023
June 28, 2023 Time 1pm-4pm



Introduction to Computer Vision Workshop

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1. Introduction and Quick Dive into AI and Image Recognition (20 minutes)

- Ice-breaker activity: "Guess the Image" game to highlight the concept of image recognition and see which images were AI generated.
- Brief introduction to AI and its role in image recognition.
- Hands-on: Students use fastai to load and visualize an image dataset (like CIFAR-10 or ImageNet), starting the process of building an image classification model.

2. Explore Image Classification with fastai (30 minutes)

- Hands-on continuation: Guide students to finish building and training the image classification model using fastai.
 - Create a Learner
 - Train the model
 - Interpret the results using a confusion matrix
- Quick discussion: Real-world applications and limitations of the model.
- Go into more details about the inner workings:
 - CNN high level explanation
 - Convolution Explanation

3. Introduction to Object Detection (40 minutes)

- Explanation: Brief introduction to object detection and its applications.
- Hands-on: Guide students to build an object detection model using a pre-processed dataset in fastai, and visualize results.

5. Building an Interface with Gradio (30 minutes)

- Introduction to Gradio: Brief overview of Gradio and its utility for creating user-friendly interfaces for models.
- Hands-on: Students build an interface for their image recognition models and object detection models using Gradio and test it with their own images.

6. Future of AI in Image Recognition & Introduction to Stable Diffusion (40 minutes)

- Discussion: Future applications of AI in image recognition, potential advancements, and ethical implications.
- Introduction to Stable Diffusion: Brief explanation and demonstration using a pre-trained model.
- Brainstorming: Students propose their own innovative ideas for the use of image recognition and Stable Diffusion.
- Hands-on: Fine tuning stable diffusion with dream booth to generate their own photos

7. Conclusion and Q&A (20 minutes)

- Recap: Summarize the day's activities and achievements.
- Open discussion and Q&A: Address students' doubts and encourage them to explore further.
- Closing remarks: Encouragement for continued learning and experimentation with AI, and resources for further study.