- Quiz

- Assignment

- Literature Review

- Open Discussion

- Input

- Project Milestones

- Tasks for next week

QUIZ

Quiz

https://forms.office.com/e/AyLvWf0CtX

ASSIGNMENT

ASSIGNMENT: WHO WILL PRESENT NEXT?

Projects Milestones

- **24.04**   **Project pitches**
- **01.05**   **Further Project Proposals and Discussions in Mattermost**
- **08.05**   **Form Groups**
- **15.05**   **Literature Review (*Submission Deadline: 18.05, 23:59*)**
- **22.05**   **Dataset Characteristics**
- **05.06**   **Definition of Model Evaluation**
- **12.06**   **Baseline Model Estimation (*Submission Deadline: 15.06*)**
- **22.06**   **Individual Feedback Sessions**
- **03.07**   **Project Presentations, Part I**
- **10.07**   **Project Presemtations, Part II**

Literature Review - Groups

Project Title	Participants
Cancer Survival Prediction (Myeloid Leukemia)	Melissa Muszelewski, Karolina Saegner
Histological Colon Polyp Classification	Daria Fedorova, Mikhail Melnichenko
Tuberculosis Detection via X-rays	Sujithreddy
Early Retirement Prediction (SHARE)	Daniel Kolbe, Lasse Schettlinger, Mariam Martinovich, Edgar Abasov
Amazon Deforestation Forecasting	Oscar Menezes Rodrigues
Volcanic Island Vegetation Mapping	Peter Haas, Fynn H., Tim-Henning Sator
Marine Forecasting / Plankton Recognition	Barbara Glemser
Historical Employment Transformation	Björn Hansen
Electric Vehicle Range Estimation	Anthony Ako Sowah (+ Natnael Guesh Hagos interested)
Seismic Event Classification	Stephan Pries
Text-based Fake News/Hate Speech Detection	Mohammad Ayham Nashar
Audio Noise Suppression	Souvick Chakraborty
Archaeological Site Prediction	Wiebke Engler
Shipping Charter Rate Prediction	Ziqing Chen, Fabiano Odorizzi

Literature Review - Breakout

- Shortly present your project idea and the papers, articles, tutorials you found to the other group(s)

- Discuss interesting ideas and concepts of these resources

- Discuss the process you have taken while searching for these resources (e.g. usage of search engines, chatbots, etc.)

Open Discussion

- ▪ Beside image data augmentation through transformations of the training data presented in the videos, what other forms of extending the diversity of an existing image dataset can you think of?

Open Discussion

- Beside image data augmentation through transformations of the training data presented in the videos, what other forms of extending the diversity of an existing image dataset can you think of?

- What are the main differences between extending a dataset through (synthetically) generated images and performing image data augmentation during the training process?

Input – Transfer Learning

- Definition: Reusing knowledge from a pretrained model on a new, related task

- Common Approaches:

Feature Extraction:

Freeze convolutional base
Train only new classifier head

Fine-Tuning:

Unfreeze top N layers of base
Jointly train base + head with low learning

Input – Transfer Learning

Typical Workflow:

1. Select pretrained model (e.g., ResNet, Inception)
2. Replace final layer(s) to match new classes
3. Option A: Freeze base, train head
4. Option B: Unfreeze last k layers, train all with smaller LR
5. Evaluate, adjust regularization or layer-unfreezing

Input – Transfer Learning

Benefits & Considerations:

Pros: faster convergence, better performance with limited data

Cons: negative transfer if domains differ, risk of overfitting

Best Practices: re-normalize inputs; use learning-rate schedulers; monitor for catastrophic forgetting

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Next Milestone: Dataset Characteristics

- Perform a data analysis of your dataset to identify:
    - Key characteristics of the dataset (Original data sources, number of samples, etc.)
    - Potential biases arising from the collected data
    - Outliers in the dataset
    - Missing values
    - Feature distributions
    - Correlations

- Utilize graphics, plots and tables to summarize the main characteristics of the dataset.

TASKS UNTIL NEXT WEEK

- Complete week 3 and 4 of the course "Convolutional Neural Networks in TensorFlow"

- Upload your literature review to your repository (Deadline 18.05. 23:59)

- Complete the assignment notebook

- Analyze the characteristics your dataset and add the analysis to your GitHub repository