Kurzvortrag: Survey on Continual Learning

Jörg Schantz

26. November 2024

Aktueller Gliederungsentwurf

1. Introduction
2. Framework for CL
3. Evaluation Metrics
4. General Approaches
   - 4.1 Replay
   - 4.2 Optimization
   - 4.3 Representation
   - 4.4 Architecture
   - 4.5 Regularization
5. Distribution Drift and Bayes
6. Regularization Approaches
   - 6.1 Parameter Space
   - 6.2 Function Space
7. Conclusion

Framework

Tasks $t = 1, ..., T$ und Sampleset $\mathcal{D} = \{\mathcal{D}_1, ..., \mathcal{D}_T\}$

$\mathcal{D}_t = \{(x_i^{(t)}, y_i^{(t)})\}_{i=1}^{n_t}$ mit n_t als die t-te Stichprobengröße

$\mathcal{D}_t$ folgt der Verteilung $\mathbb{D}_t = p(X_t, Y_t)$

$p(\mathcal{D}_{1:k}|\theta) = \prod_{t=1}^{k} p(\mathcal{D}_t|\theta)$

Evaluation Metrics

Average Accuracy $AA_k = \frac{1}{k} \sum_{i=1}^{k} a_{k,i}$

Backward Transfer $BWT_k = \frac{1}{k-1} \sum_{i=1}^{k-1} (a_{k,i} - a_{i,i})$

Forward Transfer $FWT_k = \frac{1}{k-1} \sum_{i=2}^{k} (a_{i,i} - \tilde{a}_i)$