MINISTRY OF INDUSTRY AND TRADE ELECTRIC POWER UNIVERSITY



INFORMATION ON NEW CONCLUSIONS OF DOCTORAL DISSERTATION

(Information will be posted on the Website)

Name of dissertation: Manifold Ranking Fusion and Similarity Learning for ImageRetrievalMajor: Information TechnologyCode No: 9480201Name of PhD. Student: Tran Van HuyAdvisors:1. Dr Ngo Hoang Huy.
2. Dr Nguyen Van Doan.Training Institution: Electric Power University

Summary of new contributions of the Dissertation

Contribution 1: The study proposes an algorithm for linear or nonlinear ranking fusion of multiple EMR rankings for low-level and high-level features (embedding vectors, CNN features) and effectively applies it to image retrieval with single or multiple query images:

+ Proposed methods for combining rankings of multiple EMR rankings for low-level and high-level features.

+ Developed CoEMR (L, S, P) and EMR-FRMQ algorithms to enhance the efficiency of image retrieval with single or multiple query images.

Contribution 2: The study establishes a similarity measure for images using a semisupervised learning approach and regression-based machine learning from EMR ranking results, effectively applying it to image retrieval:

+ Proposed the EMR-LSM algorithm to construct image similarity measures through a semi-supervised learning approach to EMR ranking values.

+ Introduced the EMR-SM algorithm to compute image similarity using EMR learning.

Additionally, the dissertation explores and applies improved EMR-based ranking results to the problem of image label recognition using a template-based recognition approach.

Advisors 1

Advisors 2

Hanoi, February 2025 PhD. Student (Signature)

Dr Ngo Hoang Huy

Dr Nguyen Van Doan

Tran Van Huy