Development of an adaptive optical music recognition system within a large-scale digitization project

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Outline

- Lester S. Levy Collection
- Digital Workflow Management
- Adaptive Optical Music Recognition
- Current Development

Lester S. Levy Collection

- American Sheet Music (1780–1960)
- Digitized 29,000 pieces (including “The Star-Spangled Banner” and “Yankee Doodle”)
- Database of text index records, images of the music and lyrics and colour images of the cover sheets: `http://levysheetmusic.mse.jhu.edu`

Digital Workflow Management

- Reduce the manual intervention for large-scale digitization projects
- Creation of data repository (text, image, sound)
- XML-based metadata
  - composer, lyricist, arranger, performer, artist, engraver, lithographer, dedicatee, and publisher
  - cross-references for various forms of names, pseudonyms
  - authoritative versions of names and subject terms
- Search engines
- Analysis toolkit

Adaptive Optical Music Recognition

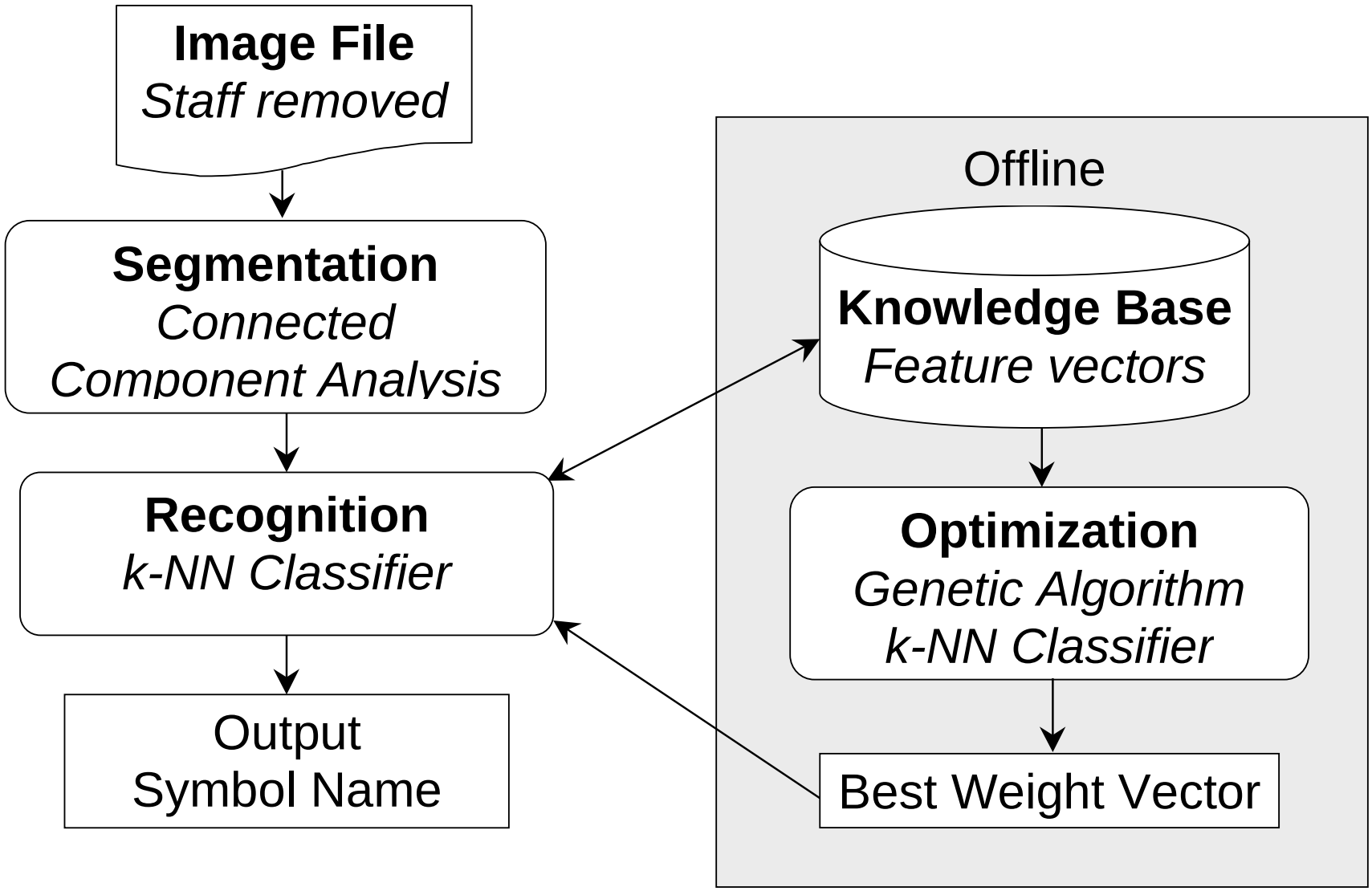
- Staff recognition and removal
  - Run-length coding
  - Projections
- Lyric removal
- Exemplar-based learning system
- Score reconstruction

Exemplar-based learning system

- Connected-component analysis
- Feature extraction
- k-nearest neighbour classifier
- Weighted-Euclidean distance measure
- Genetic algorithm

Current Development

- Interactive graphic score editor
- Prolog-based score reconstruction
- Optical Character Recognition
- GUIDO output (MIDI)
- XML database
- Fuzzy lyric/melody search



Exemplar-based learning system