

# Hands-On AI – Movie-Making Project Decomposition

Below is the decomposition of the movie-making project.

A movie-making app

- Product
  - Define the app functionality
- Front-end
  - Design the user interface
    - Identify app states/screens and transitions between them
    - Sketch the mockups
    - Prepare high-fidelity screens
  - Code the user interface in HTML5
- Back-end
  - Images
    - Extract emotions from an image
      - Train
        - Prepare a data set for machine learning
          - Collect the raw images
            - Search for a relevant data set
              - Public data sets
              - Crawling
            - Set up the storage infrastructure
          - Annotate raw images
            - Design the annotations guidelines
            - Run the annotation process
            - Check the annotation quality
        - Train a machine learning model
          - Select the framework
            - Do a comparative analysis of existing frameworks
            - Install and configure the most appropriate framework
          - Select and set up the infrastructure for machine learning
            - Do a comparative analysis of private/public clouds and execution technologies
            - Do the capacity planning to satisfy your machine learning objectives
          - Select an algorithm
          - Establish the evaluation methodology (before)
          - Prototype an algorithm
          - Improve your model by tuning hyperparameters and adding domain-specific insights
          - Evaluate the model
      - Test
        - Define service-level agreements (SLAs) for a machine learning API
        - Wrap a machine learning model into an API
        - Load test the API to see whether it meets required SLAs
    - Music

- Emotion-based song modulation
  - Select base songs
  - Implement an emotion-based modulation script
  - Test the script
- Train a music generation model
  - Prepare a data set for machine learning
    - Collect songs
      - Search for a relevant data set
        - Public data sets
        - Extract manually
      - Set up the storage infrastructure
    - Train a machine learning model
    - Select the framework
      - Do a comparative analysis of existing frameworks
      - Install and configure the most appropriate framework
    - Select and set up the infrastructure for machine learning
      - Do a comparative analysis of private/public clouds and execution technologies
      - Do the capacity planning to satisfy your machine learning objectives
    - Select an algorithm
    - Establish the evaluation methodology (before)
    - Prototype an algorithm
    - Improve your model by tuning hyperparameters and adding domain-specific insights
    - Test the transitions between songs generated for two different emotions using the same base song
- Test
  - Define SLAs for a machine learning API
  - Wrap a machine learning model into an API
  - Load test the API to see whether it meets required SLAs

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