

# Voice to Value: Multimodal Emotion Analysis for Smarter Customer Interactions

Research Practicum

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Project Submission Sheet  
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# Configuration Manual

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## 1 Device Specifications

- **Device name:** LAPTOP-94GBDQH1
- **Processor:** 11th Gen Intel(R) Core(TM) i5-11300H @ 3.10GHz (3.11 GHz)
- **Installed RAM:** 16.0 GB (15.8 GB usable)
- **System type:** 64-bit operating system, x64-based processor

## 2 Software Environment

- **Conda:** 24.11.3
- **VS Code:** 1.102.3
- **Python:** 3.12.7

## 3 Imported Python Libraries

### System Utility

- `os`
- `sys`
- `io`
- `time`
- `importlib`
- `warnings`
- `glob`

## Data Handling Visualization

- `numpy`
- `pandas`
- `matplotlib.pyplot`
- `matplotlib.pyplot.specgram`
- `itertools.cycle`

## Audio Processing

- `librosa`
- `librosa.display`
- `IPython.display`

## Web Interface

- `streamlit`
- `requests`

## Machine Learning Models

- `tensorflow` (includes CNN 1D, CNN 2D, and LSTM)
- `sklearn.preprocessing.LabelEncoder`
- `sklearn.metrics.confusion_matrix`
- `sklearn.metrics.f1_score`
- `sklearn.metrics.ConfusionMatrixDisplay`
- `sklearn.ensemble.RandomForestClassifier`
- `joblib`

## Custom Modules

- `functions` (custom module)