**Appendix I**

**Summary of Dataset and Image-Level Preprocessing**

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| Attribute | Details |
| Dataset Name | NTHU Driver Drowsiness Detection (NTHU-DDD) |
| Number of Participants | 36 |
| Original Data Format | Videos (30–40 seconds each, 30 FPS) |
| Working Data Format | Pre-extracted static image frames |
| Total Images Used | 66,521 |
| - Drowsy Images | 36,030 |
| - Not Drowsy Images | 30,491 |
| Face Detection Tool | MediaPipe FaceMesh (static image mode) |
| Number of Facial Landmarks | 468 per image |
| Eye Landmark Indices | Left Eye: [33, 160, 158, 133, 153, 144]  Right Eye: [263, 387, 385, 362, 380, 373] |
| Feature Extracted | Eye Aspect Ratio (EAR) |
| EAR Calculation Output | Average EAR per image |
| Invalid Data Handling | Skipped images with failed face detection or unreadable files |