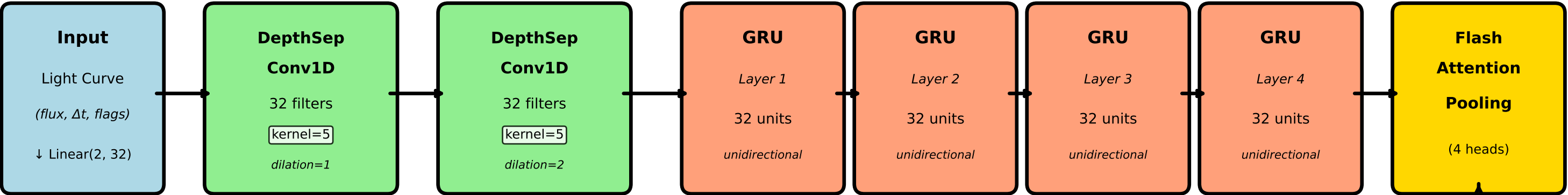


CNN-GRU Hierarchical Classification Architecture

Local Feature Extraction

Temporal Integration

32-dimensional hidden state throughout



Hierarchical Classification Head

Stage 1: Flat vs Non-Flat | Stage 2: PSPL vs Binary

$$P(Flat), P(PSPL) = P(Dev) \times P(PSPL|Dev), P(Binary) = P(Dev) \times (1 - P(PSPL|Dev))$$

CNN Receptive Field Calculation:
Conv1 ($k=5, d=1$): $RF_1 = 5$ timesteps
Conv2 ($k=5, d=2$): $RF_2 = 9$ timesteps
Total (stacked): $RF = 5 + 9 - 1 = 13$ timesteps