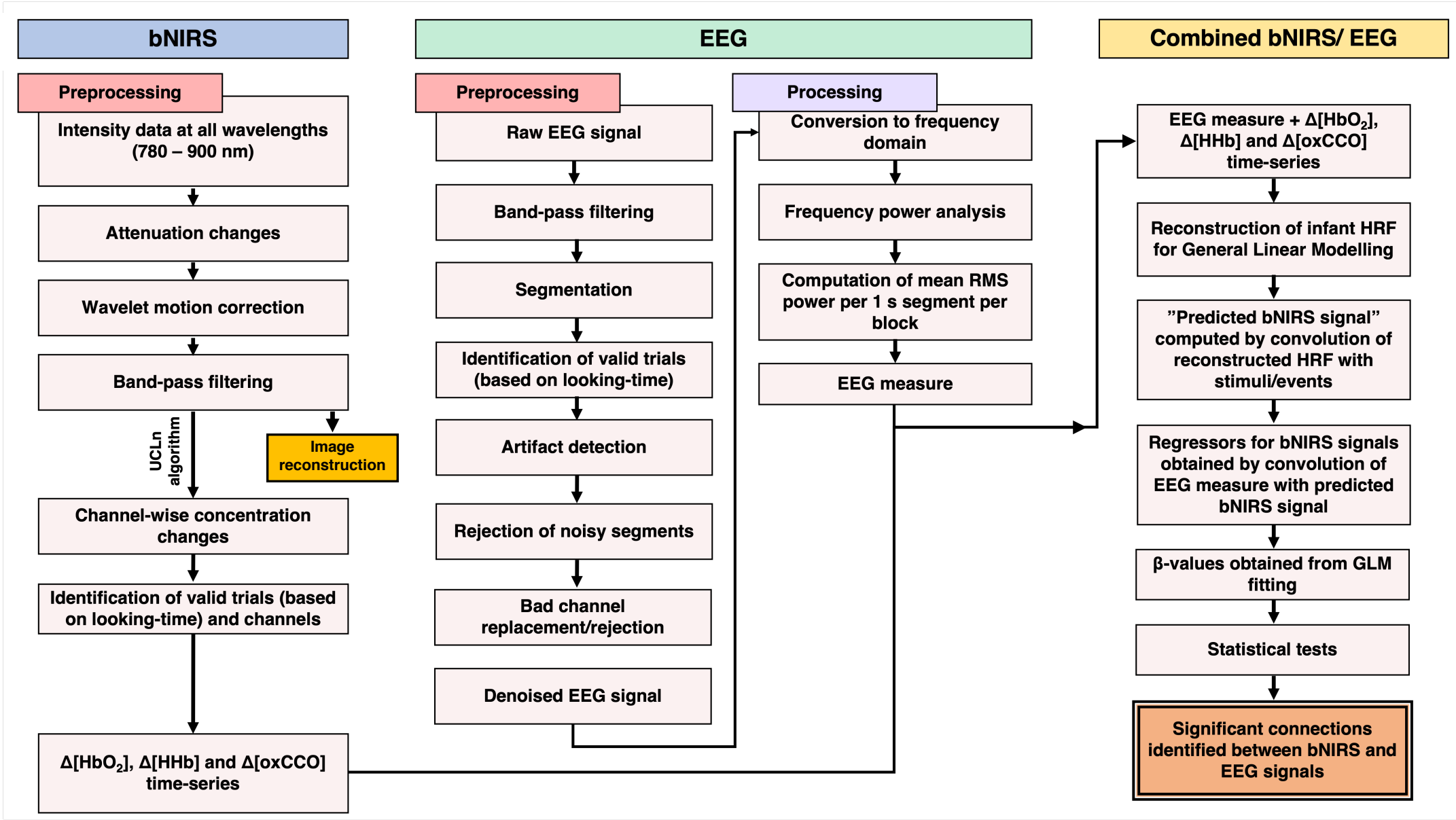
bNIRS
Preprocessing
Intensity data at all wavelengths (780 – 900 nm)
Attenuation changes
Wavelet motion correction
Band-pass filtering
UCLn algorithm
Image reconstruction
Channel-wise concentration changes
Identification of valid trials (based on looking-time) and channels
Δ[HbO2], Δ[HHb] and Δ[oxCCO] time-series
EEG
Preprocessing
Raw EEG signal
Band-pass filtering
Segmentation
Identification of valid trials (based on looking-time)
Artifact detection
Rejection of noisy segments
Bad channel replacement/rejection
Denoised EEG signal
Processing
Conversion to frequency domain
Frequency power analysis
Computation of mean RMS power per 1 s segment per block
EEG measure
Combined bNIRS/ EEG
EEG measure + Δ[HbO2], Δ[HHb] and Δ[oxCCO] time-series
Reconstruction of infant HRF for General Linear Modelling
”Predicted bNIRS signal” computed by convolution of reconstructed HRF with stimuli/events
Regressors for bNIRS signals obtained by convolution of EEG measure with predicted bNIRS signal
β-values obtained from GLM fitting
Statistical tests
Significant connections identified between bNIRS and EEG signals