# Hamilton Institute

Automated Segmentation of Speech Signals
using Dynamic Programming Principles

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**Abstract:**
This seminar will present a novel signal processing methodology for automating the media production process for the creation of educational applications. A difficult problem existed in relation to this, which involved the development of an automatic speech segmentation method. The approach proposed uses a Dynamic Programming (DP) technique known as Dynamic Time Warping (DTW). The algorithm has explored using state of the art features such as Mel-Frequency Cepstral Coefficients (MFCC) and Perceptual Linear Prediction (PLP) features. Some additional exploration into other feature extraction and speech characterisation methods has also been conducted. The segmentation methodology has incorporated Principal Component Analysis (PCA) approaches to perform speech feature transformation and dimensionality reduction. The effectiveness of this segmentation method has been validated by appropriate evaluation and analysis of the segmentation results. The results strongly show the methods ability and robustness at automatically segmenting speech, where high segmentation accuracy and low segmentation error have been achieved. The seminar will conclude by demonstrating some showcase educational applications which have commercial importance.

**Venue**: Seminar Room, Hamilton Institute,  Science Building,
        NUI Maynooth

**Time**:   2.00pm - 3.00pm (followed by tea/coffee)

Travel directions are available at www.hamilton.ie

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