The problem: sequence labeling
Structured Learning

- Learn the entire structure (i.e. sequence, string, tree...) of the problem
What is the SVM-HMM?

A specific case of

$F : X \times Y \rightarrow \mathbb{R}$

$F(x, y; \omega) = \langle \omega, \Psi(x, y) \rangle$

$\forall i \in \{1, \ldots, n\}, \, \forall y \in Y \setminus y_i : \, \langle \omega, \Psi(x_i, y_i) - \Psi(x_i, y) \rangle \geq 0$
Features

- Ratio of pitch cancelled residual to original power
- normalized original power
Different strategies

- Probability Model
  - features
  - likelihoods
- HMM
  - labels
- SVM-HMM
  - features
  - labels
Results

![Graph showing precision and recall in solo voice detection task]
References
