Classification of Percussive Sounds

Final project progress report
For MAS 622J/1.126J

Eyal Shahar

MIT Media Lab

- **Goal** – automatically classify samples according to their origin
- **Retrieval** – vocal imitation, semantic description, “something similar”
- **Project focus** – comparison of different classification methods and feature sets
- **Training set** – several hundreds of samples from each category
- **Feature extraction** – mostly with MIRtoolbox (University of Jyväskylä, Finland), original code where fails
- **Candidate methods** – K-nn, K-means, GMM, SVM…

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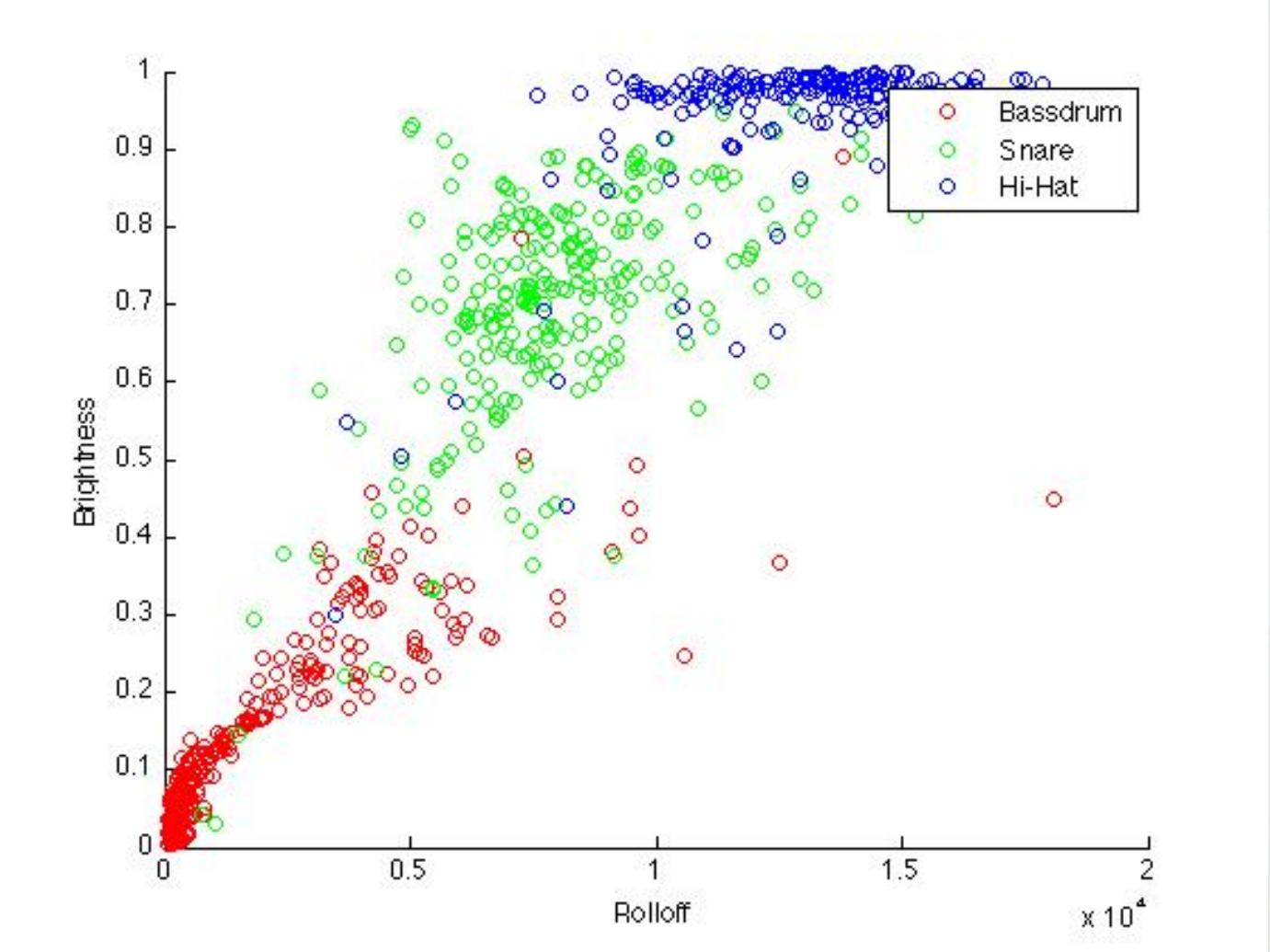
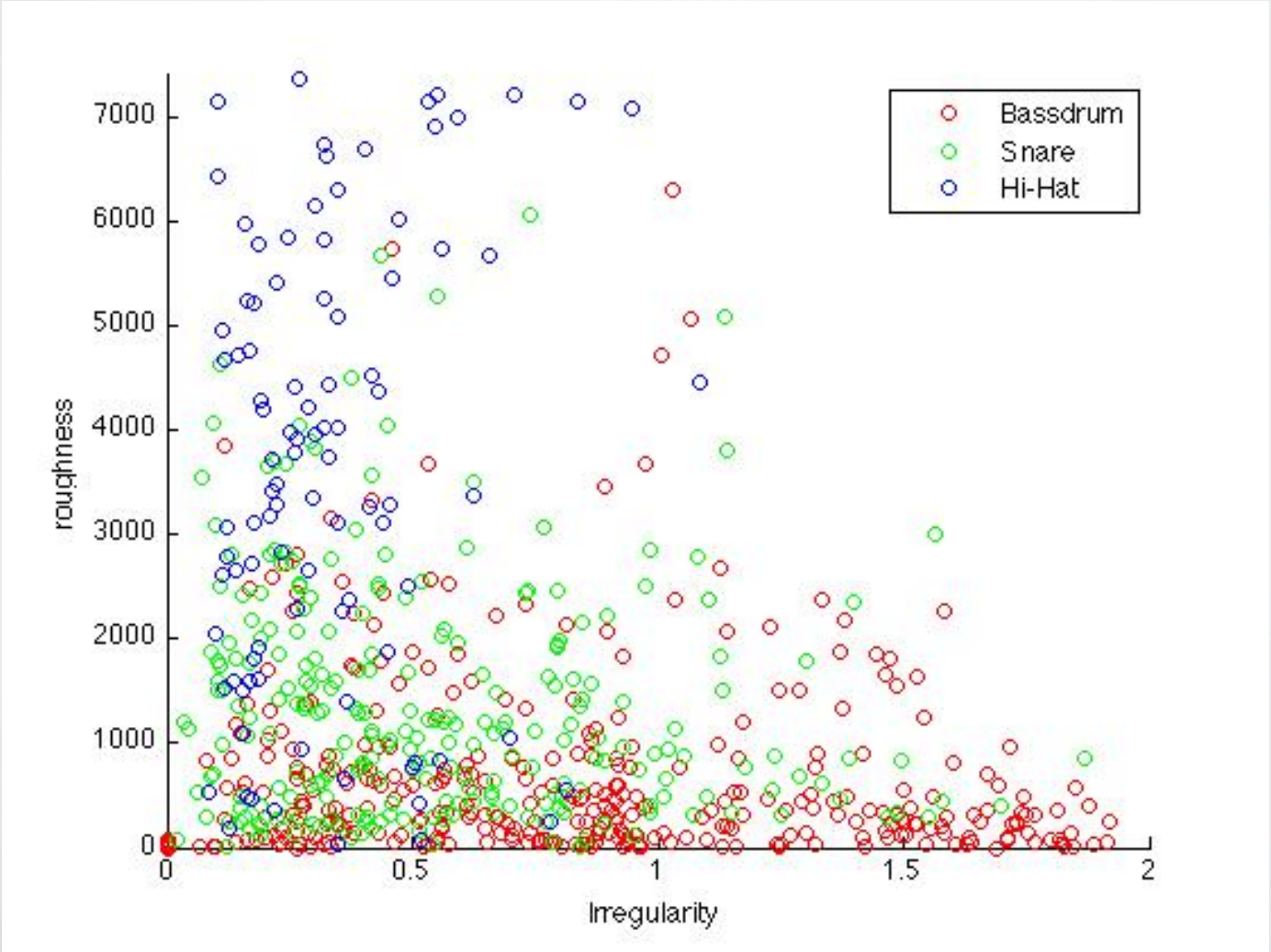
Features

- **Pitch**
- **Pitch Estimation Quality**
- **Brightness** – high frequency energy
- **Rolloff** – low frequency energy
- **Roughness** – based on the frequency ratio of each pair of sinusoids
- **Irregularity** – degree of variation of successive spectrum peaks
- **MFCC** – Mel frequency cepstrum coefficients
- **Decay rate**

Good Features



Questionable Features



Status

- Initial training database (250 samples/category, ~10 categories)
- MIRtoolbox utilization
- Feature extraction routine
- Progress PowerPoint presentation

To-do list

- Custom feature extraction code
- Training database expansion
- Classification methods selection, implementation and evaluation
- Sample retrieval implementation

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