

# Musical Robot - High-throughput determination of phase transitions using IR bolometry

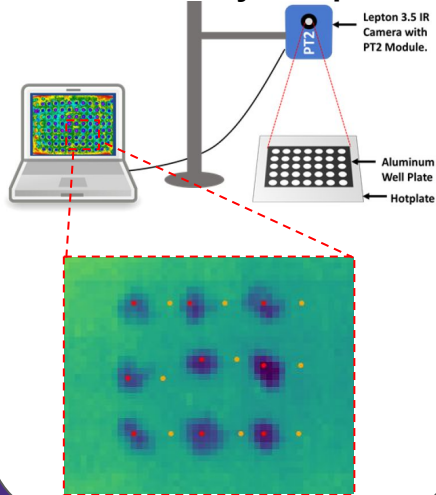


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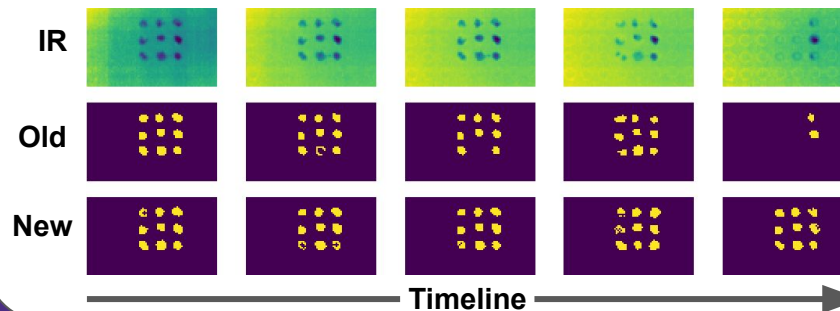
## Overview

Musical Robot is currently a Python package to analyze IR videos to obtain thermal properties for deep eutectic solvents (DES). It provides a more time-efficient alternative than the standard techniques to analyze chemical properties. In this project, further implementations are added to enhance the precision and functionality of the package.

## Bolometry Setup



## Auto-adjusted Background Reduction



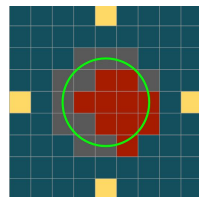
### Previous version

- Determine specimen locations at the beginning as fixed reference for whole timeline

### New Implementation

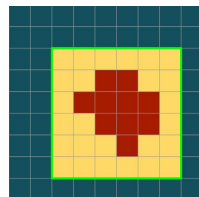
- Background reduction automatically adjusts image correction level
- Able to track specimen locations throughout timeline

## Free Forming Pixel Region Analysis



### Previous version

- Analyze data in circular regions fixed in space (gray and red)
- Environment data collected from single pixel (yellow)



### New Implementation

- New pixel analysis technique removes unrelated pixels (gray)
- Enables spatial tracking of the specimen when implemented with new edge detection
- Improves environment's temperature reading by increasing the pixel amount

## Results

- New edge detection improves accuracy of specimen identification and reduces noise level
- Simpler and more accurate method to analyze pixel data

