

# Philips Industrial Placement Presentation

Xianliang Zhou

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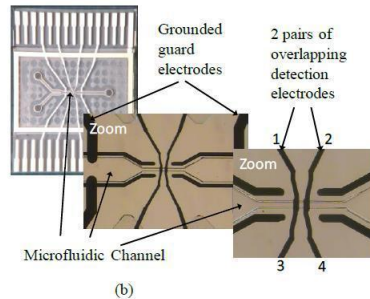
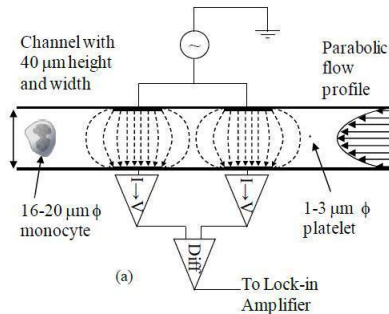
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# Project Introduction

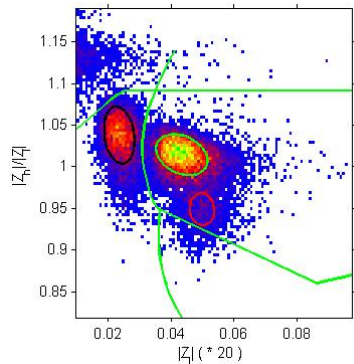
## FULL BLOOD COUNT ON A CHIP



# Software Description

## SOFTWARE PART

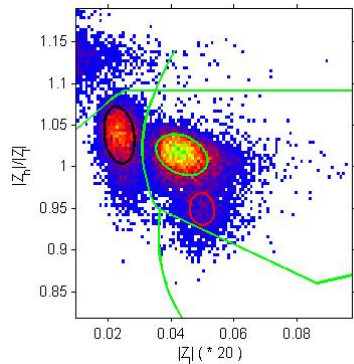
- Data capture
- Event triggering and analysis
- Event plotting and counting



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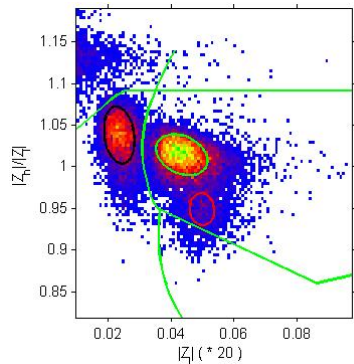
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# Optimal Event Plotting/Counting

- 1 Automatic Volume Opacity Adjustment
- 2 Multi-parametric Population Optimization and Speedup Of The Software. The final code was optimized the speed by 900%.
- 3 Create A GUI for the software by Matlab

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# GUI for the software

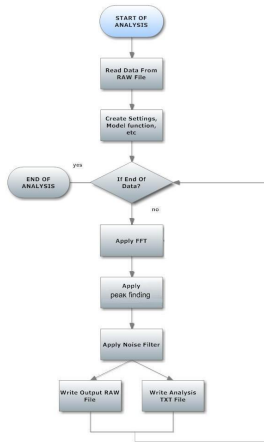
## Ellipse Mode

- Set the ellipse at any where(aim to have a nice initial guess)
- Adjust the volume factor and opacity factor manually
- Adjust the shape of ellipse
- Set the number of iteration to fit

## Polygon Mode

- Point several dots on the boundary and then get a polygon which contains all the point inside the boundary
- Calculate the count of the population inside the polygon and display it dynamically.

# Re-implement The Event Analysis



- ① Read raw file
- ② Apply FFT
- ③ Apply peak finding algorithm
- ④ Apply noise filter
- ⑤ Write raw file and analysis txt file

# Achievement

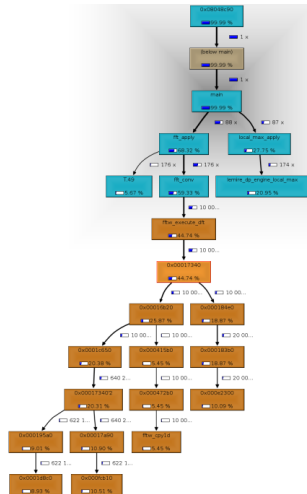


Figure 4. Time spend on each function

Code	Time	CPU usage	Precision
Matlab	334s	70%	32bit(float)
C	161s	55%	64bit(double)

# Key Skills

## USEFUL COURSES

- Software Engineering Design
- Programming Courses
- Statistics and modeling I & II
- 2nd year math project and third year group project
- Algorithm

## GAINED NEW SKILLS

- Programming skill
- Software Applications
- Code Documentation
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End

# *Thanks for Listening*

*Any Questions?*

