

# Processbook of The Invisible Light

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**Class** Creative Strategies

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# 1 Origin



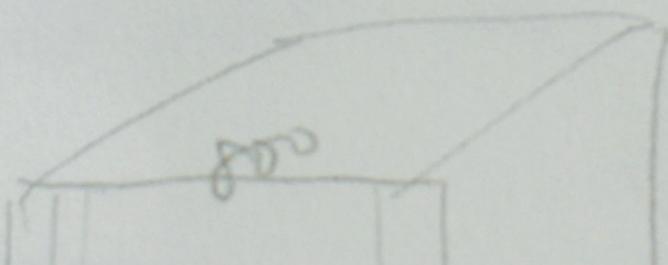
© 2009 Creative-Strategies • week 9: Cross Pollination

This is a two week project:

This is how it started.

Investigate the idea of light beneath the surface.

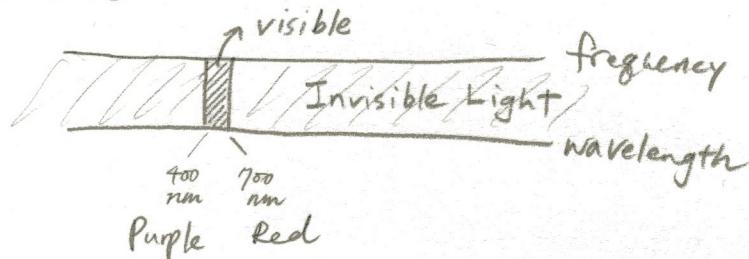
For next week (9), bring in some sketches that explore concepts for this assignment. We will work with your sketches in class, so please bring drawing materials as needed. The final result will be due in week 10.

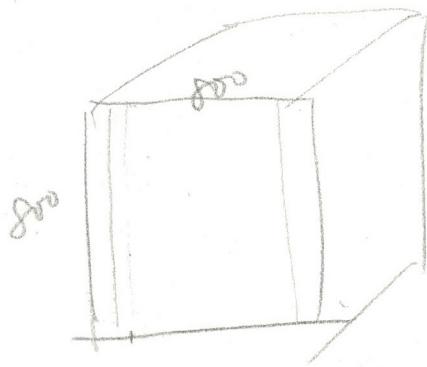


At the beginning, I related "light beneath the surface" as the *data* being retrieved using API(application programming interface) from the internet, since those raw data contains a lot of information, yet they are invisible because they do not have a visual form. My first propose was making data visualization of certain topic such as sustainability or politics, and Natalie - my project advisor was saying that this is not so cool, why don't you do something physical, try to get out of the screen! Indeed, without the computer I am absolutely handicapped. OK, then I thought maybe design T-Shirt that glows, or something that lights up itself... anything that is outside of the screen is fine.

But what happened was that a week later the day before class, my physical object was still in the virtual thinking process. I was hopeless sitting in front of my desk at midnight, almost crying. Somehow, at the most desperate moment, I ask myself, "What is LIGHT?" It came to me that light was just a certain range of electromagnetic wave. But what about the rest of the invisible EM wave? Could they be light? I looked into the air, suddenly realized that the invisible light is just there in the air everywhere! It is the wireless network signal being transmitted in the forms of EM wave. It was a stirring moment that everything suddenly became so clear, I saw the bright future...

## EM Wave.



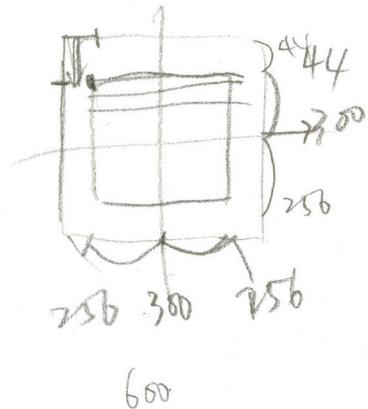


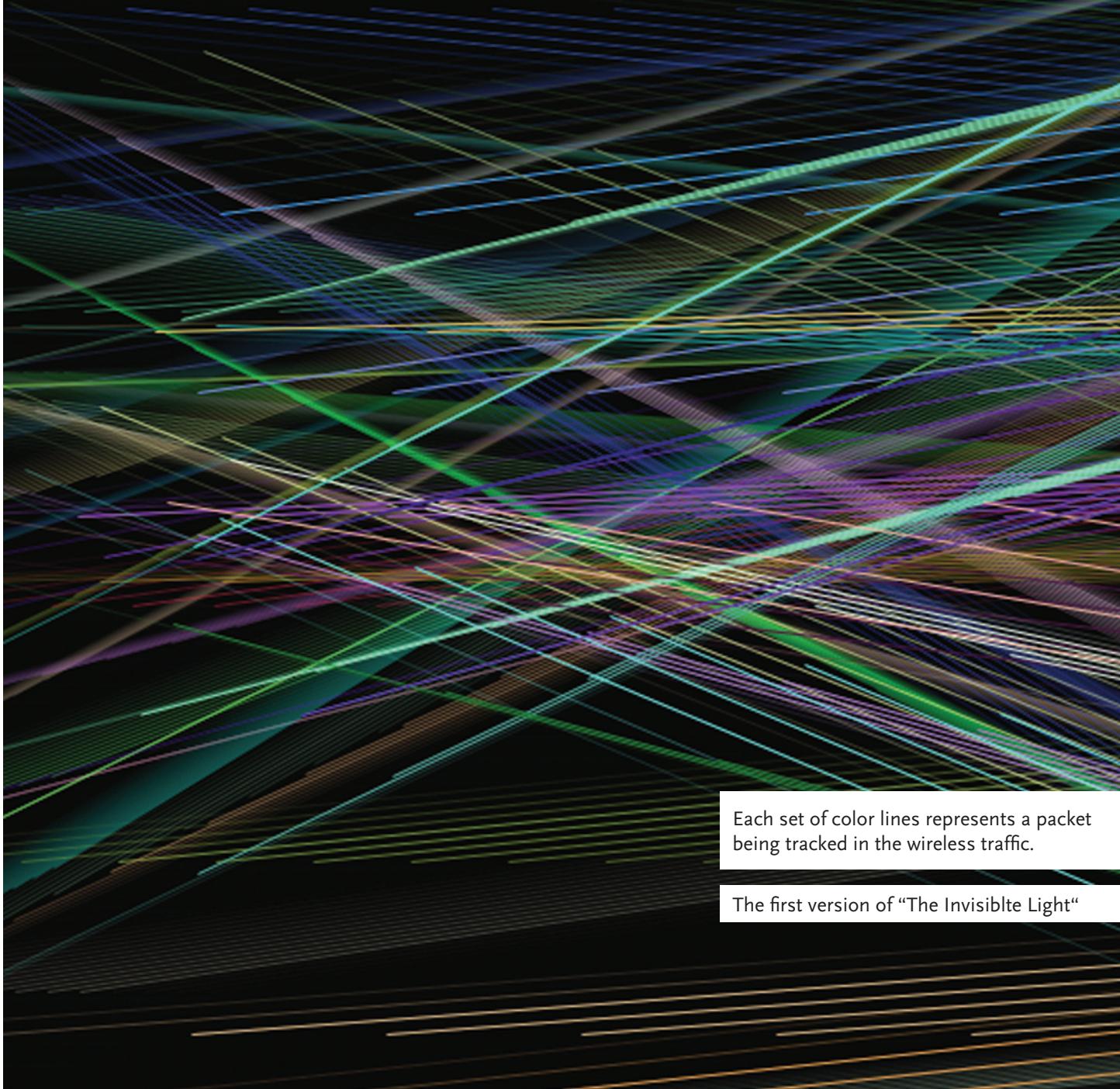
$$256 \times 2 = 512$$

1  
11111111  
11111111  
11111111  
11111111  
11111111  
11111111



My sketch in Math.





Each set of color lines represents a packet being tracked in the wireless traffic.

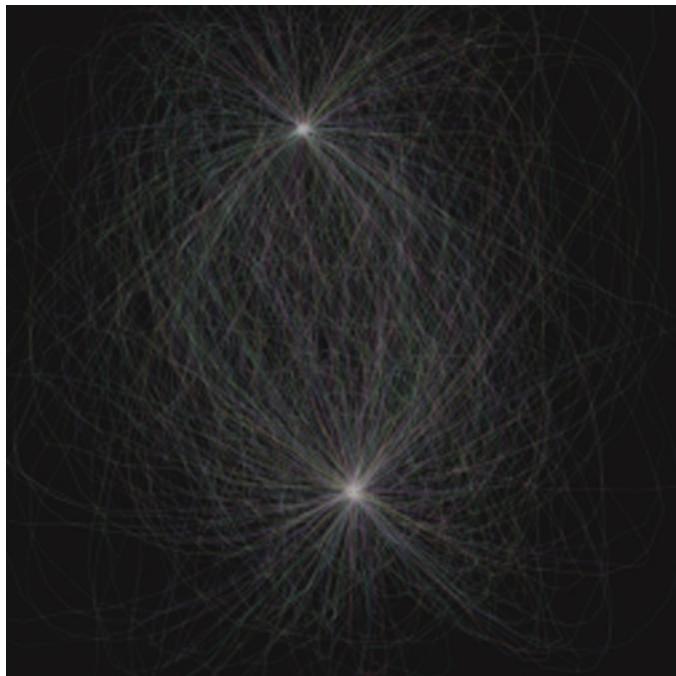
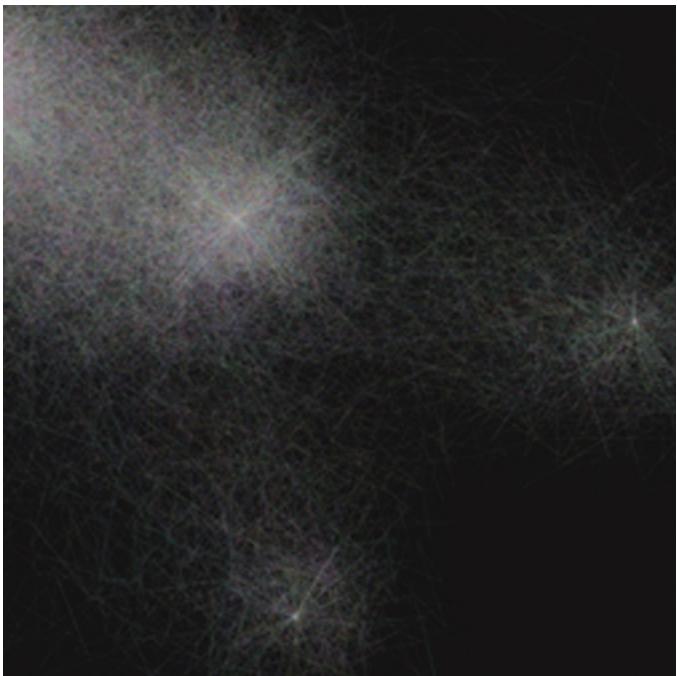
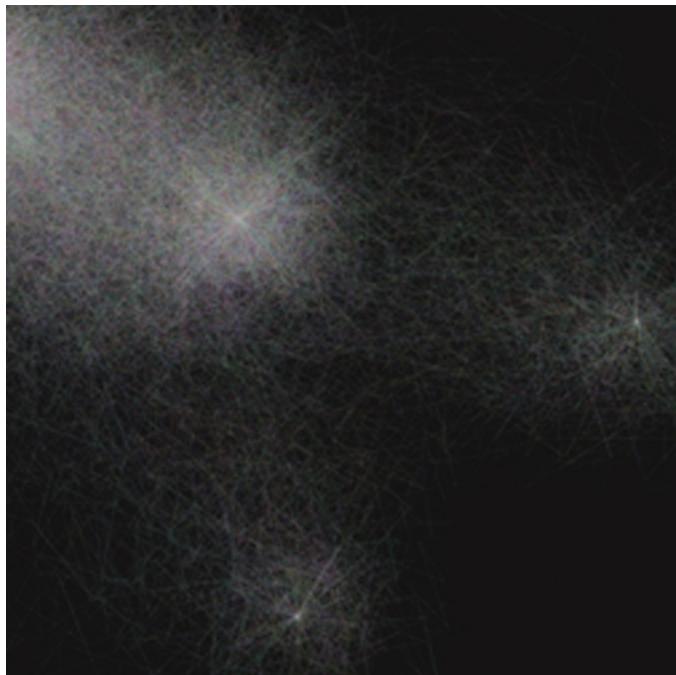
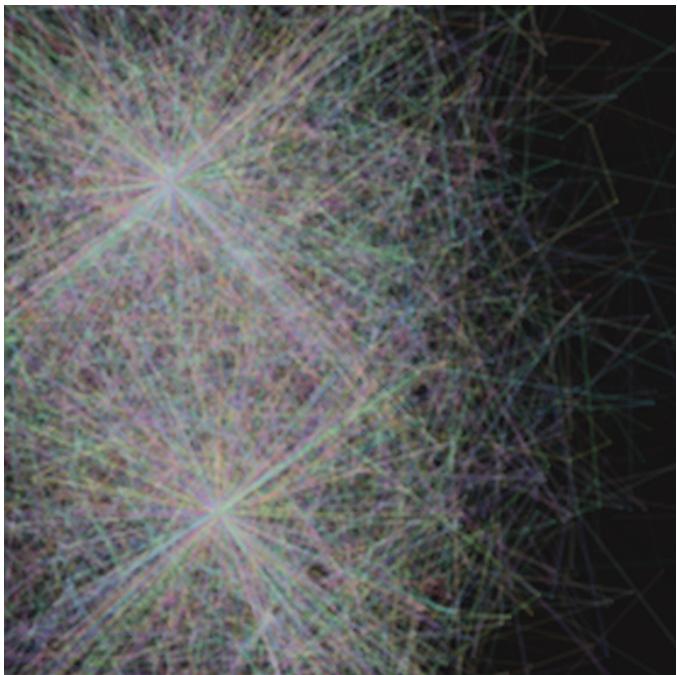
The first version of “The Invisible Light”

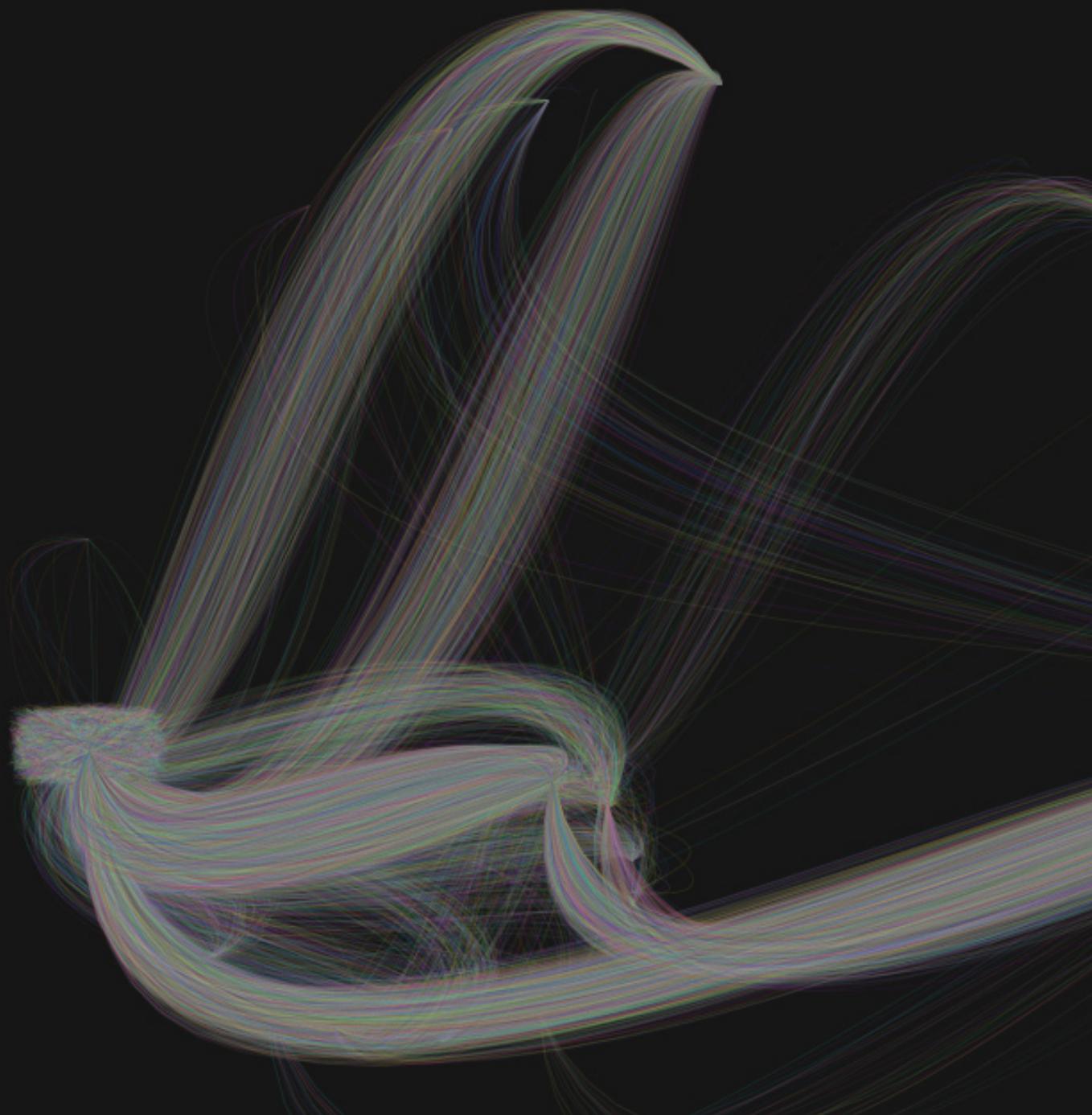
This project turned out to be pretty successful! People were excited about seeing the visualization of wireless network traffic which is closely related to everyday technology that we can not live without.

But somehow I was kind of feeling tired of the geometric line and dot, which I have used a lot. One of the thought that struck me was that, those signals exist within the same space with us, and we are actually *sharing* without notice. Somehow I felt the invisible light deserves more organic form and shape.

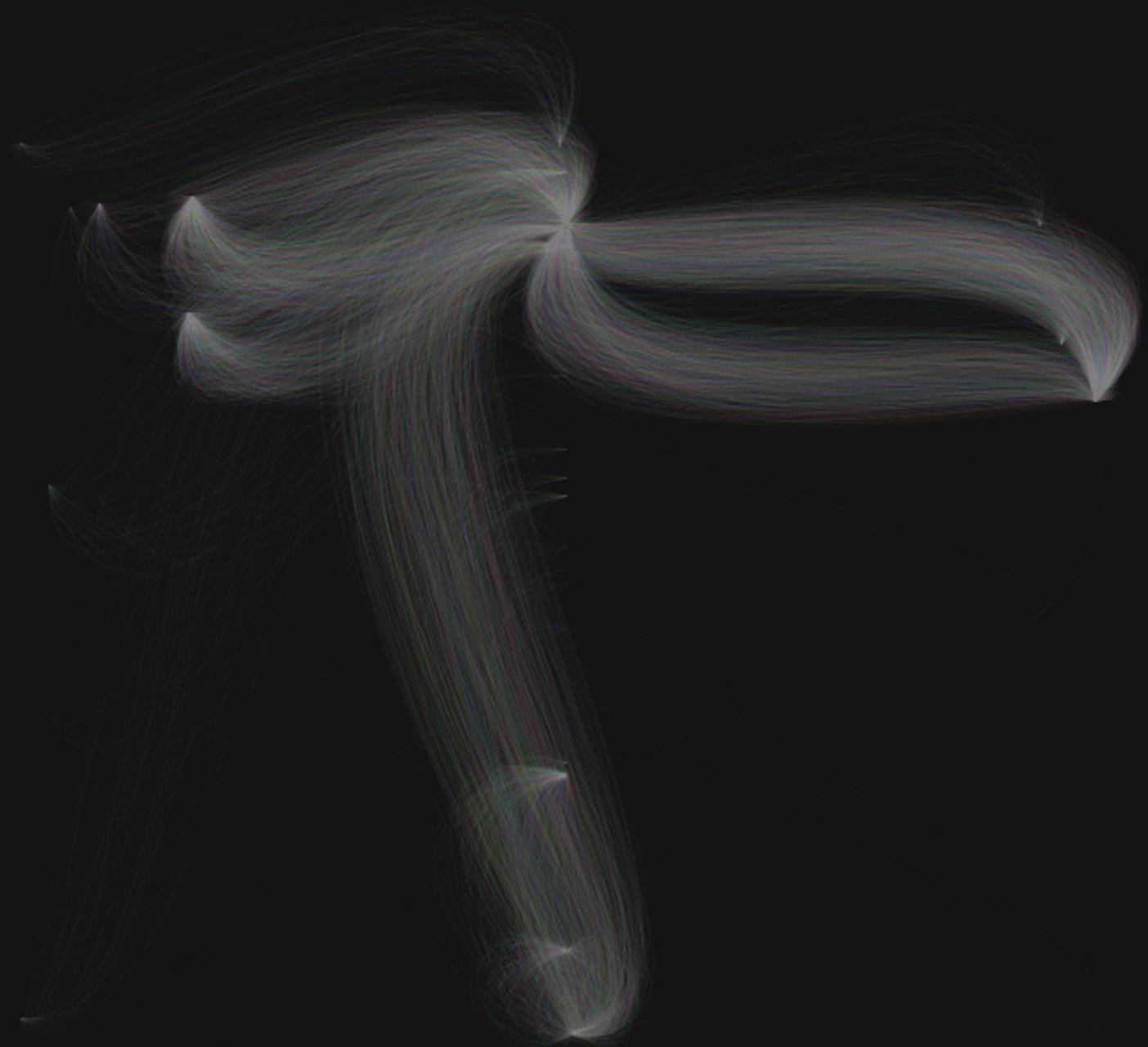
## **2** Evolution



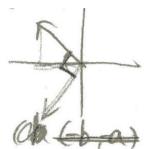
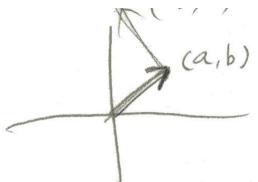








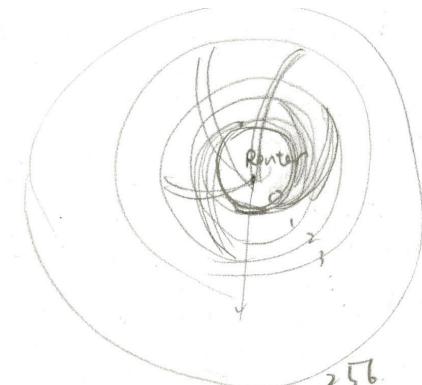
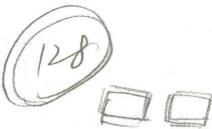
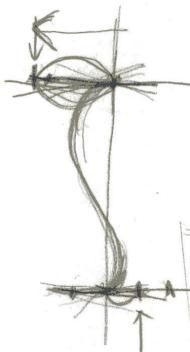
### 3 Sketch



$$(-a, b) \times (i) =$$

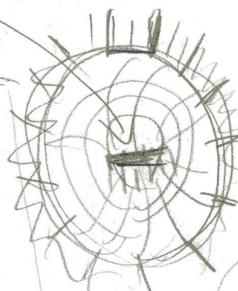
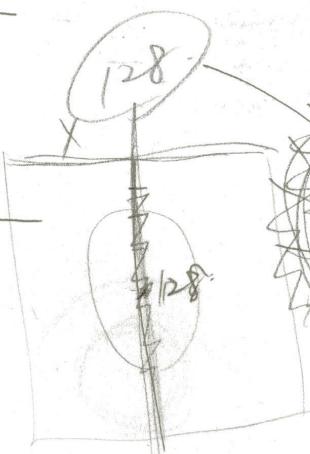
$$(a+bi) \cdot (i) = -b+ai$$

$$(a, b) \rightarrow (-b, a)$$



$$\begin{matrix} 128 \\ 256 \end{matrix}$$

$256 \times 256$



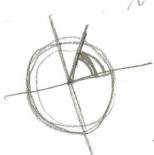
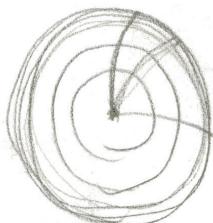
$$\begin{matrix} 0^{\circ} \\ 255 \end{matrix}$$

$$256$$

$$\begin{matrix} 750 \\ 50 \times 15 \end{matrix}$$

Lots of Math

$$\begin{matrix} 8642-968-929 \\ \text{many} \end{matrix}$$



$$0 - 256$$

3



$$b = \sin \theta$$

$$a = \cos \theta$$



$30^{\circ}$

$90^{\circ} \rightarrow i$

$$b \rightarrow \tan \theta = \frac{b}{a}$$

$$(r+oi) \cdot$$

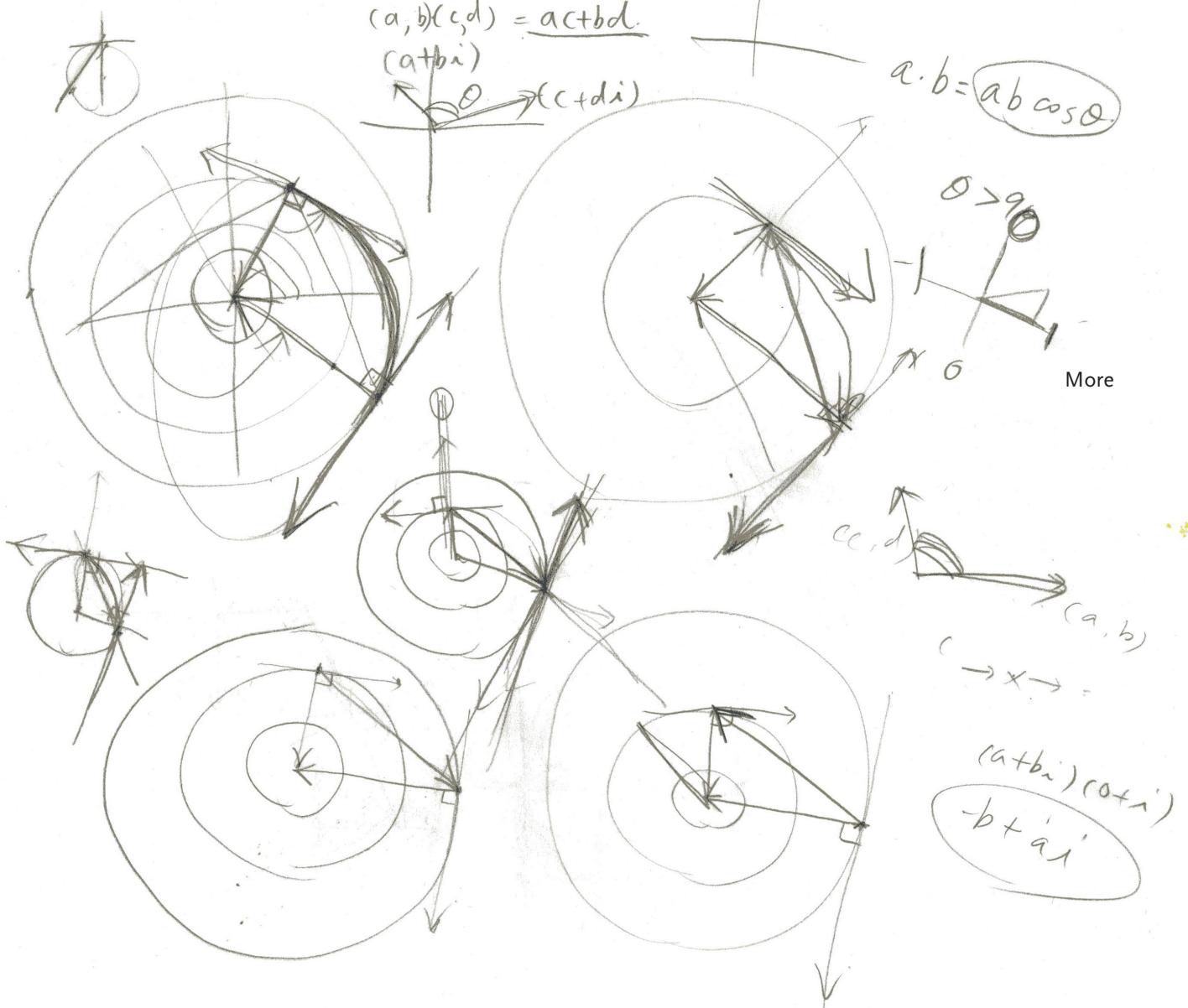
$$ip4, \pi/180$$

$$(a\cos\theta + i\sin\theta) \cdot (r\cos\theta + i\sin\theta)$$

$$atbi$$

$$g$$

$$y$$



Router

10,1,131,255

10,1,128,1-3

255,255,255,255

224,0,0,255

252

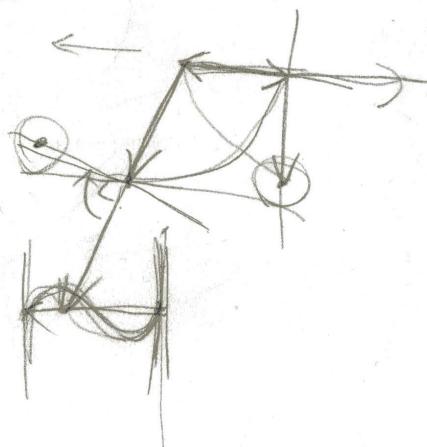
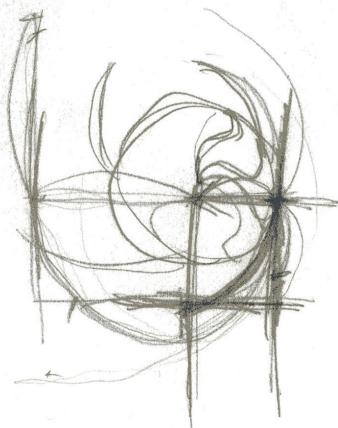
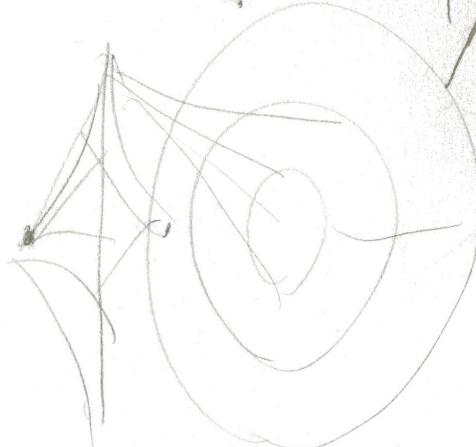
0,0,0,0

10,1,32,21

And more

(wid/2 - from x) x (hei/2 - from y)  
(wid/2 - from x) x  
(wid/2 - from y)

(oxi)



- show how this work
- introduction
- original project
- information floating in the air → future
- show the bandwidth
- show the process.
- IP MAP
- use my laptop to show detail
- reasoning
- direct different direction
- different days ~~record~~ graph
- art center VS. Caltech
- show the potential of this
- find out the variable available
- data column, frequency
- printing
- abstract
- daytime, location school (experiment)

Last individual meeting with Frido, he pointed out a lot of directions and pushed my further to think about future and potential of the project.

Manny  
626-396-2478

I contacted ACCD Internet IT Technician Manny, I showed them my program and promised I won't do anything illegal! The discussion helped me understand the whole wireless system and lead me to my final design.

## 4 ACCD Wireless Network Traffic



