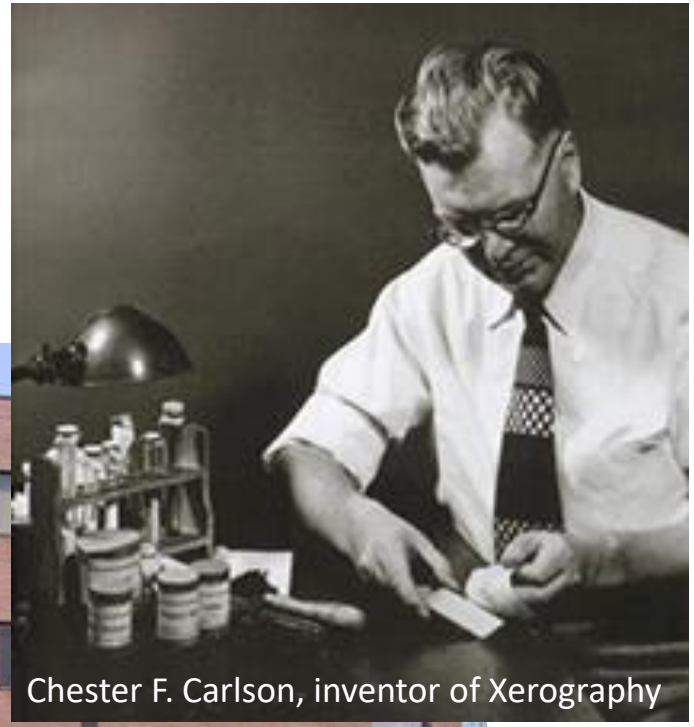
Welcome to Imaging Science!

Open House Fall 2020

October 29



Chester F. Carlson, inventor of Xerography

Chester F. Carlson Building – Home to the Center for Imaging Science

Introduction to Imaging Science

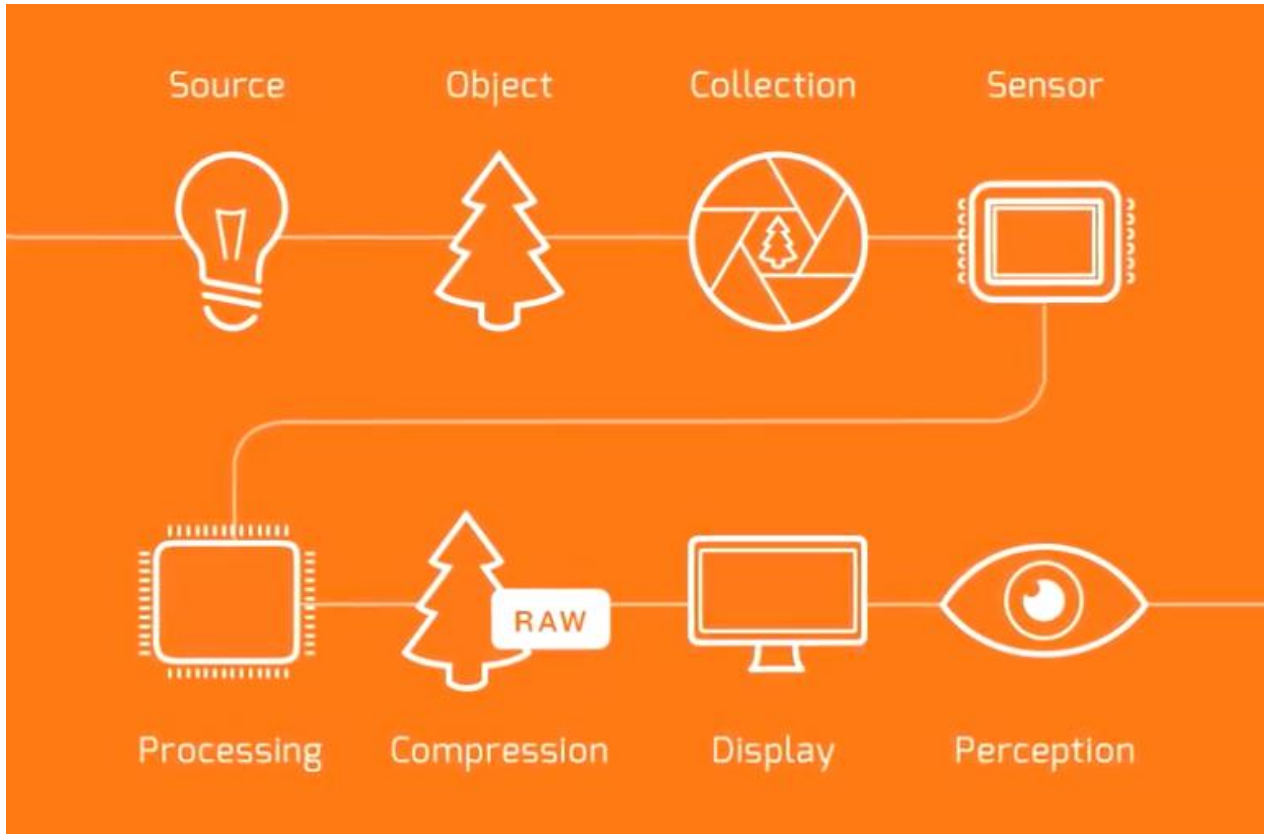
Imaging Science Academic Program

- 19 Core faculty with primary appointment in CIS
  - 25 + Program Affiliated Faculty across the RIT campus
- Degree Programs Offered
  - BS / MS / Ph.D. in Imaging Science - only program of its kind
- Total student population > 150
  - 125 graduate
  - 40 undergraduate

Over 10 Academic Disciplines Represented by the Core Faculty!

Imaging Science Club t-shirt

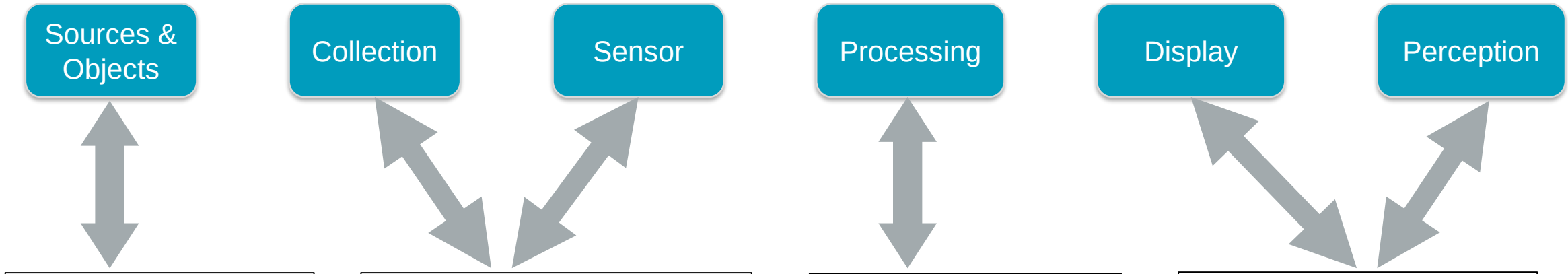
Imaging Science Academic Program



The “Imaging Chain”: the chain of events that allow us to form, analyze, and display images

Why study imaging science?

Imaging Science is an Interdisciplinary Field



Disciplines:
- **Physics**
- **Math**

Courses:
- **Radiometry**
- **Optics**

Discipline:
- **Engineering**
- **Materials**
- **Phyics**

Courses:
- **Optics**
- **Linear Systems**
- **Noise and System Modeling**

Disciplines:
- **Math**
- **Computer Science**

Courses:
- **Image Processing and Computer Vision**

Disciplines:
- **Computer Science**
- **Cognitive / Neuro Science**

Courses:
- **Human Visual System**

If you have an interest in these areas, then Imaging Science is right for you!

Imaging Science Research Program

- $5-7 million in annual research awards
- Over 20 full time research staff at all levels
- Research Laboratories focused on:
  - Remote Sensing
  - Human Visual System
  - Multi-wavelength Astronomy
  - Computer / Machine Vision
  - Cultural Heritage Imaging
  - Optics and Photonics
- **All of this research involves graduate students working in cutting edge research labs!**

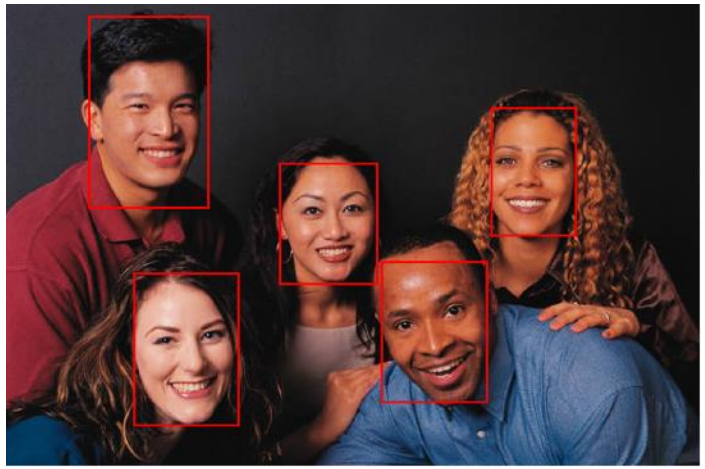
Imaging sensor package being integrated onto a UAV for precision agriculture studies

Strong Internship, Employment Opportunities (sample from 2019-2020 AY)

- Apple
- Google, Inc.
- Kitware
- Markem-Imaje
- ON Semiconductor
- Ocean Insight
- Microsoft
- NVIDIA Corporation
- Oak Ridge National Laboratory
- Quanergy Systems
- Rochester Regional Health Systems

What do imaging scientists do?

Make Smart Phones



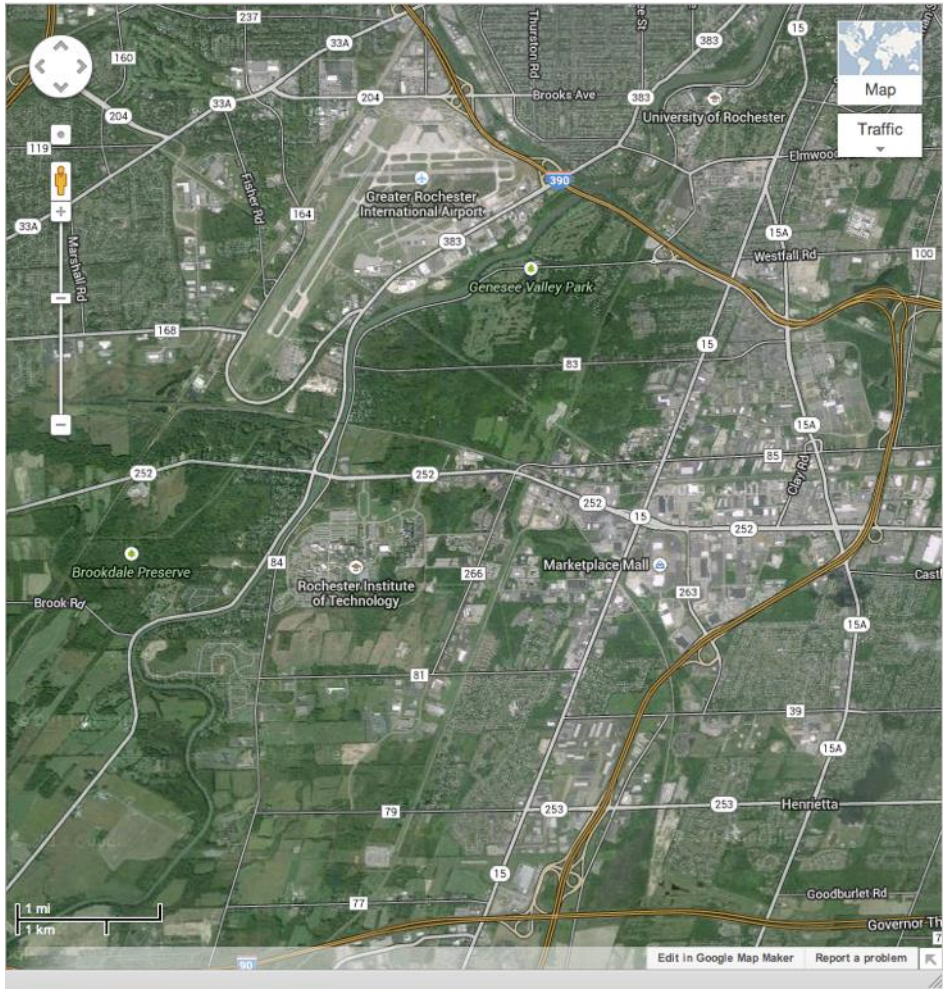
How does a **cell phone** take color pictures? How does the picture get **processed** so you can upload it to Facebook quickly? How does Facebook **identify** actual faces and ask you to tag them? How do the **displays** work?

We work at places like Apple, Google, and Motorola building the next generation of cell phone cameras, displays, and imaging apps.

Build Satellite Imaging Systems

Those **satellite images** on Google Maps are collected by a camera moving thousands of miles per hour. How does it take a picture that's **not blurry**? How do we **process** that image to provide **information** for environmental science studies?

We build the imaging optics, detectors, and computer vision algorithms to analyze those images at places like L3Harris, Boeing, Northrop Grumman, Government labs and other aerospace companies.



Build Virtual and Augmented Reality Systems

How does a **virtual reality** headset work? How does it know where you're looking to improve the image quality? How does your brain interpret those images?

We work at companies like Magic Leap, NVIDIA, and Facebook Reality Labs (Oculus) building the next generation of augmented and virtual reality devices.

Image from https://www.blippar.com/uploads/legacy/Listing/_flexL/vr-headset.jpg

Become Part of the Imaging Science Community

- **Imaging Science Club**: on-campus student club for students interested in imaging-related work
  - Weekly meetings
  - Hosted an ”Imaging Hackathon” with sponsorship from a local company
  - Other events include “The Hunt” - an annual image / video scavenger hunt, movie nights, hosting industrial visitors, and many other events

- Strong **alumni network** across many industries and the US.

Over 200 Imaging Science alumni at RIT in Fall 2019. Image taken from a small UAV.

Questions?

Raytheon
Space and Airborne Systems

oculus

PLANETARY
RESOURCES

Microsoft

EAGLEVIEW

CENTER FOR
GEOSPATIAL
ANALYSIS

Thank you for joining us!

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