Workforce Development in the AI/AS Space
An Enterprise Perspective

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The University of Maine AI Series
IEEE At A Glance

- More than 423,000 members in more than 160 countries
- 334 Sections in ten geographic Regions worldwide
- 2,116 Chapters that unite local members with similar technical interests
- 486 affinity groups; Consultants' Network, Young Professionals (YP), Women in Engineering (WIE), Life Members (LM), and IEEE Entrepreneurship
- 39 Societies and seven technical councils
- More than 4 million documents in the IEEE Xplore® Digital Library more than 8 million downloads each month
- 1,300 active standards and more than 500 standards under development
- Publishes approximately 200 transactions, journals, and magazines
- Sponsors more than 1,800 conferences in 95 countries while:
  - Partnering with more than 1,300 non-IEEE entities globally
  - Attracting more than 485,000 conference attendees
  - Publishing more than 1,500 conference proceedings via IEEE Xplore
AI/AS Careers:
Two paths emerging......

MIT Deep Learning Series
A New Education Model:

Self driving vehicle nanodegree
- Introduction to self driving cars
- Computer vision
  - Finding lanes on the road
  - Advanced lane finding
- Deep learning (NVIDIA)
  - Traffic sign classifier
  - Behavioral cloning
- Sensor fusion
  - Extended Kalman filters
- Localization
  - Kidnapped vehicle
- Planning
  - Highway driving
- System integration
  - Programming a self driving vehicle
Application Education Resources Everywhere
Some pricey, some inexpensive, some free
**R & D Education Resources Everywhere**

**But...**

CONVOLUTIONAL NEURAL NETWORK

**IMAGE INPUT**

ONE FRAME PER COLOR

SIZE/STRIDE

CLASSIFICATION

\[
f(t) * g(t) = \int_{-\infty}^{+\infty} f(t - \lambda)g(\lambda)d\lambda
\]

\[
K_{\text{gaussian}}(x^{(i)}, x^{(j)}) = \exp\left(- \frac{\|x^{(i)} - x^{(j)}\|^2}{2\sigma^2}\right)
\]

posterior = \frac{\text{prior} \times \text{likelihood}}{\text{evidence}}
A strong foundation is absolutely crucial

Calculus, Differential Equations, Linear Algebra, Numerical Methods, Probability & Statistics
Thank you and be safe!!

Many thanks, again, to the University of Maine, IEEE USA, and Dr. Ali Abedi for inviting me to participate in today’s event

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