Some thoughts on PHM in Education

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PHM Annual Conference 2018
Challenges

- PHM topics are highly interdisciplinary: electrical, mechanical, structural, environmental, computer, industrial, ...
- Earlier panels → Most PHM knowledge is on-the-job training, and is not learnt in academia
- Systems knowledge is lacking in academia (largely)
- In general, faculty expertise?
- Too many programs already
Some existing courses at Villanova

• Machine learning/AI: CS, Statistics, Engineering
• Adaptive, Robust control: Engineering
• Modeling & Simulation: ME (now a certificate program → degree)
  • Completely DL
  • Dynamics, Thermofluids, Mechanics & Materials
  • Future: CoE
• Fracture and failure: ME
• Reliability: ECE
• Data Science courses: Business, CS
• Diagnostics – part of Vibration, Rotor Dynamics, Thermal design
Educational Models

• Undergraduate electives
• Graduate
  • Individual courses
  • Certificate programs
  • Degree
• Continuing education
  • Workshops
  • Distance Learning modules
• Package existing courses?
• Guest lectures
• Combine across universities/labs/industries
Thanks to my students and postdocs!

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