Structure from Motion

Shree K. Nayar

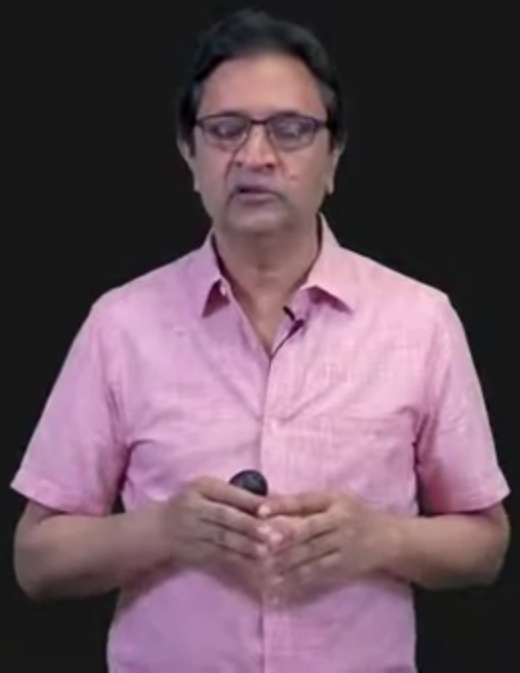
Columbia University

Topic: Structure from Motion, Module: Reconstruction II

First Principles of Computer Vision

Uncontrolled (Casual) Video

[Pollefeys 2002]



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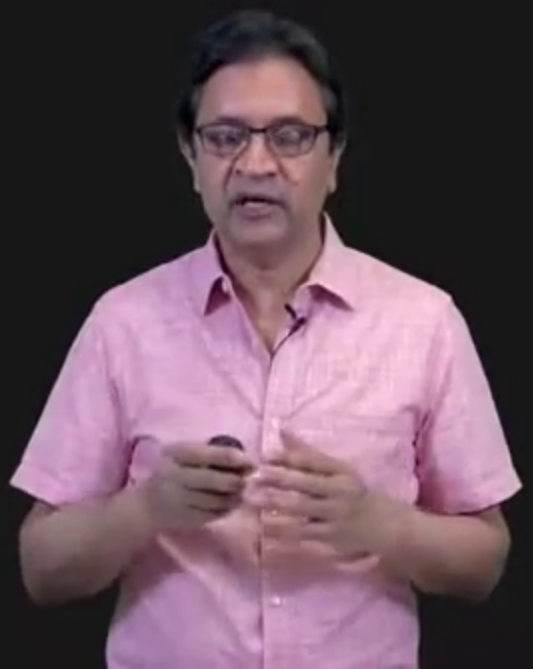

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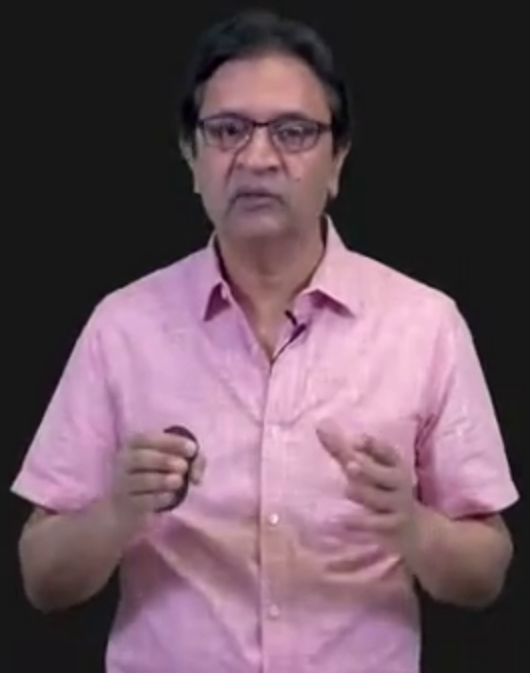
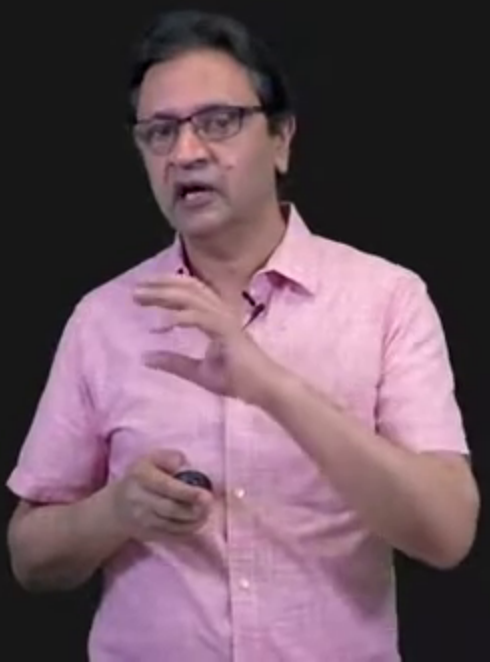


Structure From Motion

Compute 3D scene structure and camera motion from a sequence of frames.



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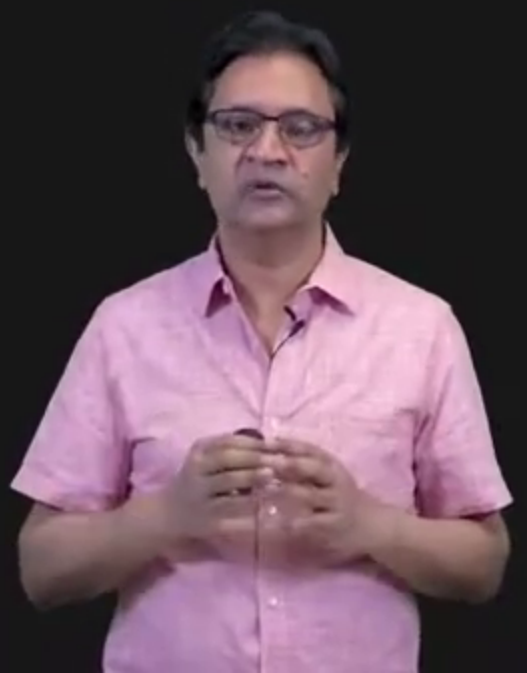
Topics:

(1) Structure from Motion Problem



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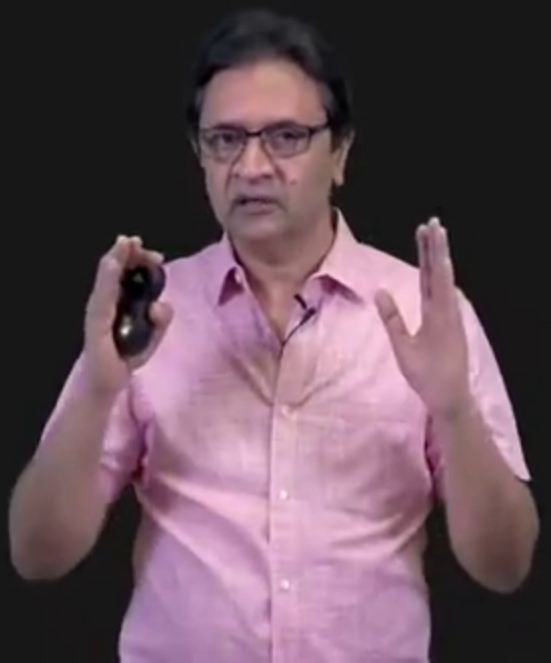

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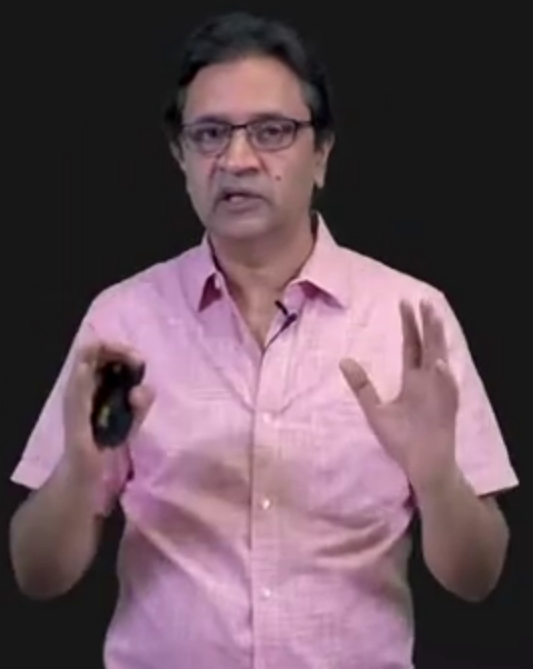
(1) Structure from Motion Problem

(2) SFM Observation Matrix



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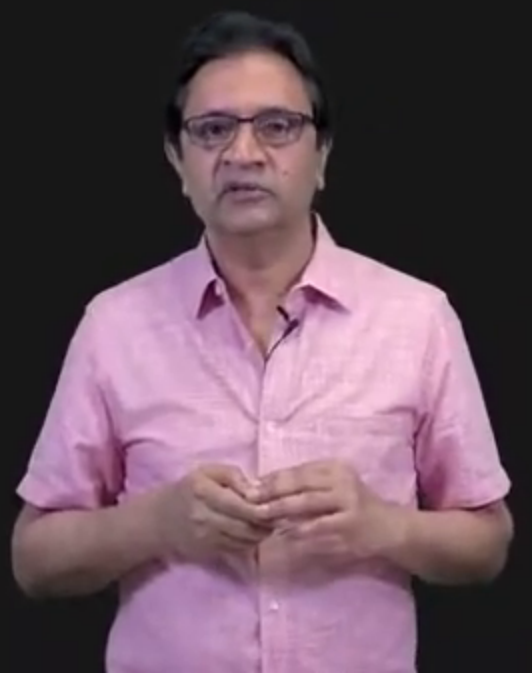

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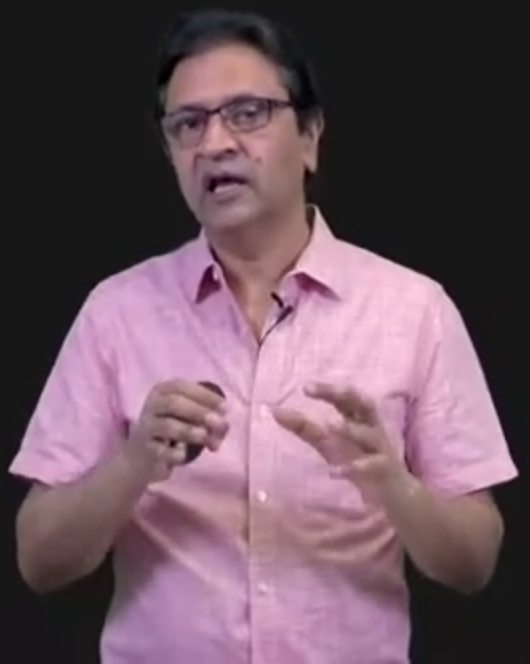
(3) Rank of Observation Matrix



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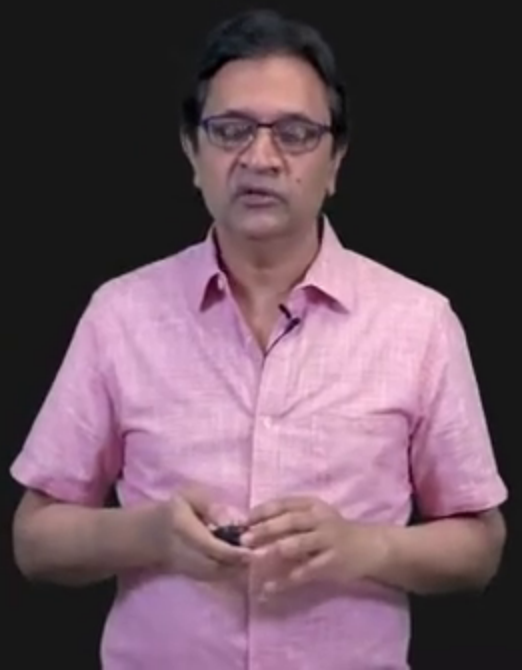

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(4) Tomasi-Kanade Factorization