NPTEL Video Course - Mathematics - NOC:Geometry of Vision

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Co-ordinating Institute - Chennai Mathematical Institute

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 30 - Proving Desargues's in three dimensions
Lecture 31 - Lifting Desargues's theorem from the plane
Lecture 32 - How to prove the converse
Lecture 33 - Chapter Three: The Shadow of a Square
Lecture 34 - Perspectivities the maps that shift perspective
Lecture 35 - Visualizing perspectivities
Lecture 36 - Perspectivities are well defined
Lecture 37 - The harmonic conjugate theorem revisited
Lecture 38 - Projectivities sequences of perspectivities
Lecture 39 - 1D projectivities a puzzle
Lecture 40 - 1D projectivities a harder puzzle
Lecture 41 - Projectivities as functions
Lecture 42 - The three fixed points theorem
Lecture 43 - 1D fundamental theorem of projective geometry
Lecture 44 - The criss cross construction
Lecture 45 - Proving pappusâ s theorem
Lecture 46 - 2D Fundamental theorem of projective geometry
Lecture 47 - The four fixed points lemma
Lecture 48 - The shadow of a square
Lecture 49 - Chapter Four: The Analytic Framework
Lecture 50 - Introducing the cross ratio
Lecture 51 - Evenly spaced points
Lecture 52 - How many cross ratios ?
Lecture 53 - Invariance of the cross ratio
Lecture 54 - Injectivity of the cross ratio
Lecture 55 - Proving the 3 fixed points theorem
Lecture 56 - Bonus: the cross ratio as a function
Lecture 57 - The real projective plane
Lecture 58 - Homogeneous coordinates
Lecture 59 - Homogenous proof that parallel lines converge
Lecture 60 - Bonus: join and meet as cross product
Lecture 61 - Affine charts
Lecture 62 - The matrix group of transformations of RP2
Lecture 63 - The fundamental theorem of PGL(3,R)
Lecture 64 - Visualizing the action of PGL(3,R)
Lecture 65 - Proving the fundamental theorem of PGL(3,R)
Lecture 66 - Conclusion to Geometry of Vision