



Digital Media Workshop

Experiments in ARTificial Intelligence

art with machines

Years taught: Fall 2021

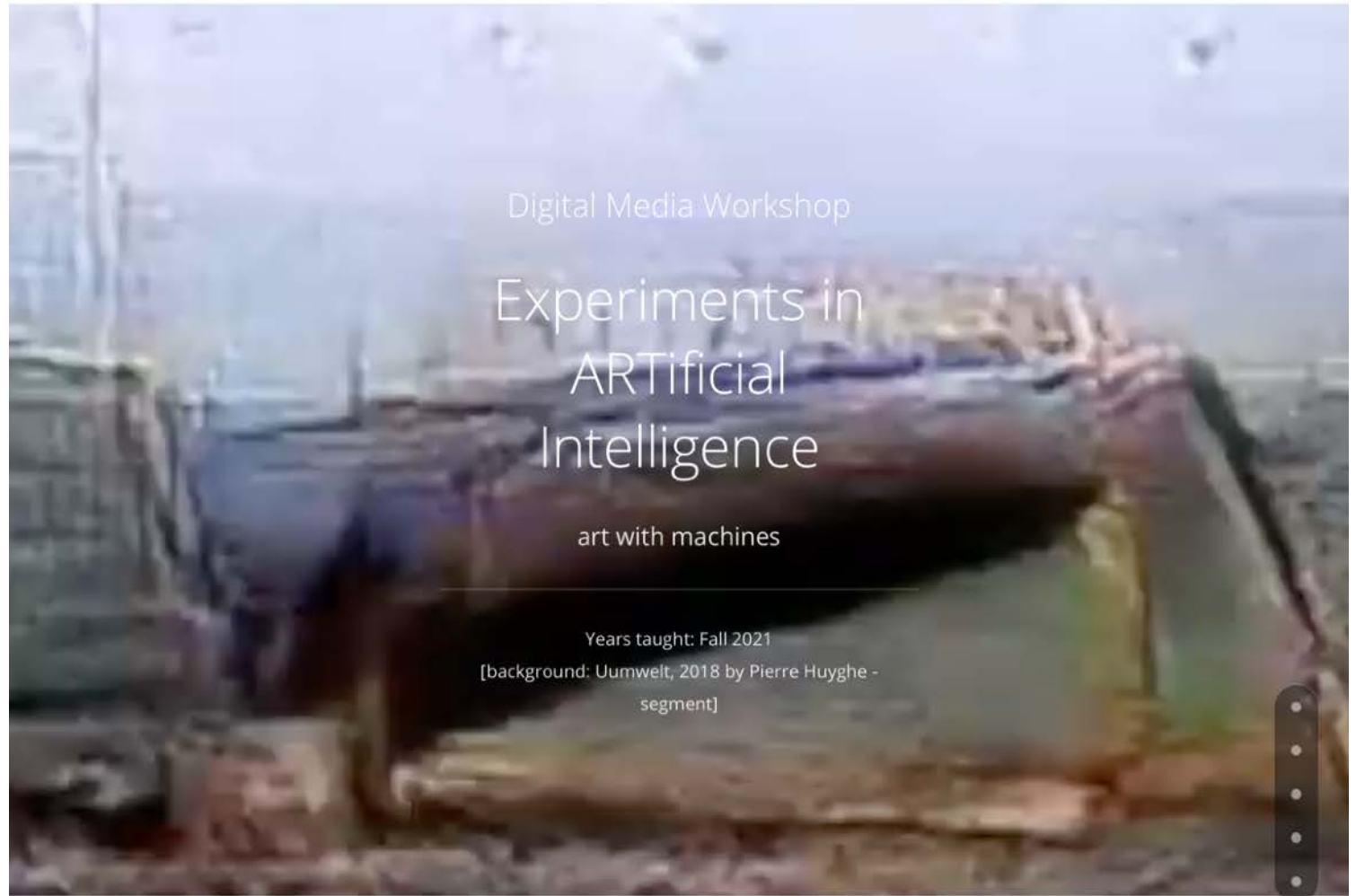
[background: Uumwelt, 2018 by Pierre Huyghe -
segment]

[UF Catalog](#)[Course Description](#)[Course Details](#)[Learning](#)

ART 4612C/6925C Digital Media Workshop is a revolving topics, studio workshop. This semester we will explore ARTificial Intelligence. We will learn about the history and theory of AI in computing from a scientific, mythological, and material viewpoint. We will investigate it from a “pharmakological” position that is deeply critical, yet simultaneously analytical with regard to its potential. Not only will we gain a literate understanding of AI, but we will learn “heurectically”: we will learn through the act of making. Students will materially engage AI as a medium for the production of art works. Experience with digital image practices, computer modeling and programming are recommended, but not required.

The class is a hands-on, art studio, experimental workshop. It is project-based and students will propose work that explores their own practice using artificial intelligence as a medium or source of inspiration. Sample project ideas include but are not limited to: simulations, networked experiences, generative audio, generative imagery (still and motion), info-viz, general research, etc.

As a Senior-level and Graduate-level course, you develop your own project ideas (with our help). Your primary task is to challenge your own abilities and push the boundaries



UF Catalog	Course Description	Course Details	Learning
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Credits: 3; Prereq: [ART 2620C \(Net Art\)](#) or with permission of faculty.

Jack Stenner, Ph.D
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Undergraduate: ART 4612c Section 11633
Graduate: ART 6925c Section 11699
Class: PHYSICAL – Fine Arts Bldg C Room 302
Time: T/Th 8:30AM – 11:30AM
Website: <http://jackstenner.com/teaching/ai>
Listserv: Class contact will be made UF email and via Discord (evite to be p

Objectives

Over the course of the semester, the goal is to help you develop your art practice in the following ways:

1.

Context

Become aware of the history and material foundation of AI.

2.

Synthesis

Learn the appropriate integration of digital processes.

3.

Criticality

Engage meaningful discussion and develop criticality.

4.

Awareness

Gain an awareness of related work in the field.

5.

Communicate

Propose ideas in a way that clearly demonstrates intent.

6.

FUN

Have FUN!



Attendance

Grades

Evaluation

Grades will be based 90% on projects, reviews, and class assignments. 10% will be based on class participation. See below for the breakdown. Participation means you are expected to constructively criticize your peers and participate in class discussions. Failure to do so will impact your participation grade.

Detailed, specific info on grades and grading can be found at:

<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

Notwithstanding the description of grades above, generally, grades are conceived in this way:

A(Excellent) Student's work is of exceptional quality and the solutions to problems show a depth of understanding of the program requirements. Project is fully developed and presented well both orally and graphically. Student has developed a strong and appropriate concept that clearly enhances the overall solution. The full potential of the problem has been realized and demonstrated.

B(Good) Student's work shows above average understanding and clear potential. All program requirements are fulfilled and clearly and concisely presented.

C(Fair) Student's work meets minimum objectives of course and solves major problem requirements. Work shows normal understanding and effort. Quality of project as well as the development of knowledge and skills is average.

D(Poor) Student's work shows limited understanding and/or effort. Minimum problem requirements have not been met. Quality of project or performance as well as development of knowledge and skills is below average.

F(Failure) Student's work is unresolved, incomplete and/or unclear. Minimum course objectives or project requirements are not met, and student's work shows lack of understanding and/or effort. Quality of project or performance is not acceptable.

Instructor's evaluation of student's interest, motivation, attendance, proficiency and overall development or improvement during the semester will be taken into consideration in determining the final course grade. This syllabus is subject to refinement and development throughout the semester based on feedback and class interaction. Policies and grading criteria are absolute and will not change. Any substantial changes will be discussed with the class prior to implementation.

Grading breakdown:

Assignments (5) = 50%
Reflections (10) = 20%
Final Project = 20%
Participation = 10%

[Attendance](#)[Grades](#)[Evaluation](#)

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Despite what some lunatics might say, Covid-19 is STILL a problem. We are required to meet in person this semester, but thankfully there is a vaccine. Please get one! You MUST, at a minimum, follow [UF Covid-19 Guidance](#) as a member of this community.

[Attendance](#)[Grades](#)[Evaluation](#)

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

[Materials/Fees](#)[Readings](#)[Policies](#)[H.B. 233](#)

Readings will consist of .pdfs and URLs available on the class website. While not required, I highly recommend [Atlas of AI](#) by Kate Crawford.

Projects



Reflections

Reading Reflections



Assignments

AI Exercises



Final Project

AI and Unity



Documentation

Project Document

Experiments in ARTificial Intelligence Schedule

[return to course](#)

AI Schedule

Tuesday 08.24, Thursday 08.26

Week 1: Introduction and Setup

Content:

Syllabus Review

Intro to Experiments in ARTificial Intelligence

Intro to Art, Artists and AI

STUDIO: ZSH Terminal Intro, Development Environment Configuration

SCREEN: [Naked AI](#)

Assignment:

Complete the reading(s) below and post reflections on Canvas by next Tuesday.

[UF LinkedIn Experiments in ARTificial Intelligence Playlist - Learning Zsh](#)

Readings:

Slocombe, Will. "Machine Visions: Artificial Intelligence, Society, and Control." In *AI Narratives*, Cave, Dehal, Sarsvatl et.al, 213–36. Oxford University Press, 2020.

Tuesday 08.31, Thursday 09.02

Week 2: What is AI? History of Machine Intelligence

Content:

Discuss reading(s) assigned last week.

DEMO: Introduction to AI techniques

STUDIO: Experiment with RunwayML

SCREEN: [Coded Bias](#)

Assignment:

Complete the reading(s) below and post reflections on Canvas for discussion next week.

Assignment 1: Experiment with RunwayML, prepare for CRIT, post reflection to Canvas.

Readings:

Crawford, Kate with Hao, Karen. "Stop Talking about AI Ethics. It's Time to Talk about Power." n.d. *MIT Technology Review*, April 23, 2021.

Tuesday 09.07, Thursday 09.09

Week 3: Art, Artists and AI

Content:

Discuss reading(s).

CRIT Assignment 1: RunwayML experiments.

SCREEN: Lo and Behold: Reveries of the Connected World, by Werner Herzog

Assignment:

Complete the reading(s) below and post reflections on Canvas.

Assignment 2 - Create a network-based artwork using p5.js that incorporates still imagery, video and, optionally, some form of interaction.

Readings:

Steyerl, Hito. "Medya: Autonomy of Images" in *Astro Noise: A Survival Guide for Living under Total Surveillance*. by Laura Poitras, New York: Whitney Museum of American Art, 2016. pp. 162-177

Tuesday 09.14, Thursday 09.16

Week 4: Image Classification 1

Content:

Discuss reading(s).

CRIT: Assignment 2 - P5.js artwork

Learn to implement basic image classification using existing machine learning models.

Assignment:

Complete the reading(s) below and post reflection on Canvas.

Assignment 3 - Image Classification Artwork 1

Readings:

Mackenzie, Adrian. "The Production of Prediction: What Does Machine Learning Want?" *European Journal of Cultural Studies* 18, no. 4-5 (August 1, 2015): 429-45.

Tuesday 09.21, Thursday 09.23

Week 5: Image Classification 2

Content:

Discuss reading(s).

Saving and loading training models, exploring multiple techniques.

Google Colab and Jupyter Notebooks

Assignment:

Continue developing Assignment 3 - Image Classification Artwork 1

Readings:

None

Tuesday 09.28, Thursday 09.30

Week 6: Object Detection, Computer Vision

Content:

CRIT: Assignment 3 - Image Classification Artwork 1

Learn to implement Object Detection.

Assignment:

Complete the reading(s) below and post reflection on Canvas.

Assignment 4 - Create an artwork using Object Detection

Readings:

Boden, Margaret A., and Ernest A. Edmonds. "Explaining the Ineffable." In *From Fingers to Digits: An Artificial Aesthetic*, 61-89. The MIT Press,

Tuesday 10.05, Thursday 10.07

Week 7: Transfer Learning

Content:

Discuss reading(s).

Learn to create and train your own neural network.

Assignment:

Continue development of Assignment 4 - Object Detection Artwork

Readings:

None

Tuesday 10.12, Thursday 10.14

Week 8: More Neural Networks

Content:

CRIT: Assignment 4 - Object Detection Artwork

Learn to work with various NN types and processes (CNN, kNN, GAN).

Assignment:

Complete the reading(s) below and post reflection on Canvas.

Assignment 5 - Create an experimental AI artwork.

Readings:

[Droitcour, Brian. "GANs and NFTs." ARTnews.Com \(blog\), May 28, 2021.](#)

Tuesday 10.19, Thursday 10.21

Week 9: More Neural Networks

Content:

Discuss reading(s).

Experiment with StyleGAN, Style Transfer, etc.

Assignment:

Continue development of Assignment 5 - Experimental AI artwork

Readings:

None

Tuesday 10.26,

Week 10: Working with TEXT

Content:

Learn about Sentiment Analysis, GPT2, Text to Image, Word2Vec, etc.

Experiment with inter-application communication using OSC.

Assignment

Complete the reading(s) below and post reflection on Canvas.

Readings:

[Agostinelli, Erika. "I Don't Trust AI: The Role of Explainability in Responsible AI." Erika Agostinelli, April 1, 2021.](#)
[Women in Data Science, Bristol 2021 - Agostinelli Crowdcast begins at 1:13:19](#)

Tuesday 11.02, Thursday 11.04

Week 11: Sound

Content:

CRIT: Assignment 5 - Experimental AI artwork
Discuss reading(s).
Learn sound classification and pitch detection.

Assignment:

Experiment with AI and sound.

Readings:

None

Tuesday 11.09, Thursday 11.11

Week 12: AI and Game Engines

Content:

Understanding Unity ML-Agents and Reinforcement Learning.
STUDIO - Work through Unity3D Hummingbird Tutorial

Assignment:

Complete ML-Agent Hummingbird Tutorial.
BEGIN: Final Project, brainstorm and prepare to present concept in class on Tuesday.
Complete the reading(s) below and post reflection on Canvas.
ATTEND: Michael Mandiberg Visiting Artist Talk!

Readings:

[Crawford, Kate, and Trevor Paglen. "Excavating AI." -. Accessed May 12, 2021.](#)
[Crawford, Kate. "Time to Regulate AI That Interprets Human Emotions." Nature 592, no. 7853 \(April 6, 2021\): 167-167.](#)

Tuesday 11.16, Thursday 11.18

Week 13: AI and Game Engines

Content:

Review Final Project concepts.
STUDIO - Develop AI/Game Engine artwork.

Assignment:

Continue work on Final Project - AI/Game Engine artwork

Readings:

None

Tuesday 11.23, Thursday 11.25

Week 14: AI and Game Engine

Content:

STUDIO - Develop AI/Game Engine artwork

Assignment:

Continue work on Final Project - AI/Game Engine artwork
Complete the viewing below and post reflection on Canvas.

Readings:

[Manovich, Lev. AI and the Myth of Creativity. DigitalFUTURES world. Digital Consortium Lecture - The Hitchhiker's Guide to Artificial Intelligence.](#)
[Accessed August 5, 2021.](#)

Tuesday 11.30, Thursday 12.02

Week 15: AI and Game Engine

Content:

STUDIO - Develop AI/Game Engine artwork

Assignment:

Continue work on Final Project - AI/Game Engine artwork

Readings:

None

Tuesday 12.07, Thursday 12.09

Week 16: AI and Game Engine

Content:

STUDIO - Develop AI/Game Engine artwork

Assignment:

FINISH work on Final Project - AI/Game Engine artwork

Readings:

None

Thursday 12.16

Exam Week: Final Exams - final review 7:30AM - 9:30AM.

FINAL CRITIQUE

ARTificial Intelligence Resources

[back to Experiments in ARTificial Intelligence](#)

[back to Full Luxury AI](#)



My Support Forum

ARTISTS

Artists who incorporate artificial intelligence in their practice.

im here to learn so :)))))) by Zach Blas

Use the filters to narrow your focus on specific topics.
[Return to ARTificial Intelligence Resources](#)

The artists below are dynamically retrieved from my bookmarking application. Please feel free to send links to artists you think should be included.

Tags

Is one of ▾

- Any - ▾

Apply

Reset

Artist	Capture Date	Taxonomy
A Data Artist's Guide to Putting People (and Privacy) First	Fri, 05/07/2021 - 02:59	data , data_visualization , ai , artificial_intelligence , artist , experimentsinai , syllabus
Anatomy of an AI System	Mon, 09/10/2018 - 05:16	amazon , infrastructure , ai , artificial_intelligence , art , artist , syllabus , experimentsinai , aiseminar
Artificial Intelligence & Life Art – Prix Ars Electronica	Mon, 06/14/2021 - 04:26	experimentsinai , syllabus , artist , art , artificial_intelligence , ai , aiseminar
Beck - Hyperlife (Hyperspace: A.I. Exploration) - YouTube	Wed, 07/28/2021 - 03:04	ai , artificial_intelligence , artist , stylegan , syllabus , experimentsinai
AI Artist's Guide to Putting People (and Privacy) First	Fri, 05/07/2021 - 02:59	data , data_visualization , ai , artificial_intelligence , artist , experimentsinai , syllabus

TECHNOLOGY

Stuff that makes it happen.

from *Cultural Analytics* by Lev Manovich

Use the filters to narrow your focus on specific topics.

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Tags

Is one of ▾

- Any - ▾

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Title	Capture Date	Taxonomy
10.1: Introduction to Neural Networks - The Nature of Code - YouTube	Sat, 07/31/2021 - 09:22	javascript , js , ai , artificial_intelligence , syllabus , technology , experimentsinai
ADE20K dataset	Mon, 07/26/2021 - 01:38	computervision , datasets , dataset , technology , syllabus , experimentsinai , aiseminar
AI Explorables PAIR	Fri, 07/30/2021 - 03:53	ai , artificial_intelligence , machine_learning , syllabus , experimentsinai , aiseminar , technology , theory
AI for Social Good Guide - Google AI	Fri, 07/30/2021 - 03:55	machine_learning , ai , artificial_intelligence , syllabus , experimentsinai , aiseminar , technology , theory
An Intuitive Explanation of Convolutional Neural Networks - the data science blog	Tue, 08/03/2021	cnn , neural_network , ai , artificial_intelligence , technology , syllabus , experimentsinai

THEORY

Some of the ways we think about it.

from Silver Peak Lithium Mine by Kate Crawford.

Use the filters to narrow your focus on specific topics.

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Tags

Is one of

- Any -

Apply

Reset

Title	Capture Date	Taxonomy
"I don't trust AI": the role of Explainability in Responsible AI	Wed, 07/28/2021 - 06:49	ai , artificial_intelligence , theory , syllabus , experimentsinai , aiseminar
AI Explorables PAIR	Fri, 07/30/2021 - 03:53	ai , artificial_intelligence , machine_learning , syllabus , experimentsinai , aiseminar , technology , theory
AI for Social Good Guide – Google AI	Fri, 07/30/2021 - 03:55	machine_learning , ai , artificial_intelligence , syllabus , experimentsinai , aiseminar , technology , theory
Algorithmic Justice League - Unmasking AI harms and biases	Wed, 04/28/2021 - 05:24	ai , artificial_intelligence , experimentsinai , aiseminar , syllabus , theory
Cybertopia - Dreams of Silicon Valley - Docu - 2015 - YouTube	Wed, 04/22/2020	california_ideology , silicon_valley , cybernetics , libertarianism , technologicaldeterminism , ai , artificial_intelligence , syllabus , theory



Tutorials

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Topics	Replies	Views	Last post
 A+T Facilities by jstenner » Wed Mar 17, 2021 12:02 pm	0	198	by jstenner  Wed Mar 17, 2021 12:02 pm
 SOUND ROOM: Using Pro Tools HD Native by jstenner » Tue Apr 02, 2013 7:36 am	3	1094	by jstenner  Tue Oct 09, 2018 7:20 am
 BrightSign Getting Started by jstenner » Thu Mar 03, 2011 7:17 am	1	2423	by jstenner  Mon Feb 05, 2018 7:22 am
 BrightSign video preparation by jstenner » Thu Mar 03, 2011 7:11 am	3	3730	by jstenner  Wed Nov 22, 2017 7:15 am
 BLACK BOX - FAC 302 by jstenner » Tue Oct 10, 2017 6:19 am	0	788	by jstenner  Tue Oct 10, 2017 6:19 am
 RED Epic Dragon AND RED Raven by jstenner » Mon Feb 25, 2013 2:24 pm	6	3569	by mchristo  Mon Oct 10, 2016 2:38 pm
 302 Plasma Instructions by mchristo » Fri Sep 27, 2013 11:17 am	0	867	by mchristo  Fri Sep 27, 2013 11:17 am
 Quick Maya - V-Ray - EXR to After Effects Workflow 04.26.2021 by jstenner » Tue Apr 27, 2021 4:06 am	0	123	by jstenner  Tue Apr 27, 2021 4:06 am
 Smooth Preview Render in V-Ray by jstenner » Wed Apr 14, 2021 4:12 am	0	125	by jstenner  Wed Apr 14, 2021 4:12 am
 Turntable beauty and wire-frame render via Maya and V-Ray: 01.30.2021 by jstenner » Sat Jan 30, 2021 1:50 pm	0	192	by jstenner  Sat Jan 30, 2021 1:50 pm
 Basic Unity3D Glow demo: 12.02.2020 by jstenner » Wed Dec 02, 2020 12:55 pm	0	499	by jstenner  Wed Dec 02, 2020 12:55 pm
 Basic Unity3D pathfinding using NavMesh demo: 10.29.2020 by jstenner » Mon Nov 02, 2020 5:26 pm	0	280	by jstenner  Mon Nov 02, 2020 5:26 pm
 Basic Maya to Unity3D BlendShape Demo: 10:29.2020 by jstenner » Mon Nov 02, 2020 4:51 pm	0	278	by jstenner  Mon Nov 02, 2020 4:51 pm
 Unity, Maya, Cinemachine, Particle Sprite Demo: 10.08.2020 by jstenner » Tue Oct 13, 2020 3:44 am	0	924	by jstenner  Tue Oct 13, 2020 3:44 am
 ABA Class Workflow 2019 by jstenner » Tue Mar 19, 2019 7:27 am	0	647	by jstenner  Tue Mar 19, 2019 7:27 am
 Recording Audio with Zoom F8 Field Recorder by jstenner » Wed Sep 26, 2018 1:10 pm	0	686	by jstenner  Wed Sep 26, 2018 1:10 pm
 OVERVIEW: A+T Motion Composite Workflow by jstenner » Fri Apr 03, 2015 3:40 am	1	10241	by jstenner  Wed Apr 12, 2017 8:41 am
 Capturing HDRI Spherical Images with Canon 5D and Nodal Ninja by jstenner » Wed Apr 05, 2017 8:35 am	0	822	by jstenner  Wed Apr 05, 2017 8:35 am
 Ashley's ANDROID + Unity3D Notes by arlong95 » Tue Apr 04, 2017 9:27 am	0	716	by arlong95  Tue Apr 04, 2017 9:27 am
 SHOOTING: Filtration by jstenner » Tue Apr 04, 2017 7:09 am	0	708	by jstenner  Tue Apr 04, 2017 7:09 am
 Red Mag Reader Connections by mchristo » Mon Oct 10, 2016 2:38 pm	0	585	by mchristo  Mon Oct 10, 2016 2:38 pm
 Panasonic GH4 Info by jstenner » Mon May 18, 2015 3:35 pm	1	515	by jstenner  Tue Oct 04, 2016 8:48 am
 A+T Microphone Info by jstenner » Wed Feb 04, 2015 6:37 am	12	1942	by jstenner  Wed Feb 04, 2015 8:04 am
 Canon 5D MkIII and Magic Lantern by jstenner » Mon Sep 29, 2014 10:47 am	0	970	by jstenner  Mon Sep 29, 2014 10:47 am
 HTML5 Video Preparation [OBSOLETE] by jstenner » Wed Nov 27, 2013 9:34 am	0	2608	by jstenner  Wed Nov 27, 2013 9:34 am

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41 topics   

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