Photographic Technology What is Coming?

"The future is not google-able." William Gibson

Jamie Johnson for the Orleans Photo Club 2022-01-08

Agenda

- Introduction
- Survey
- TheWireCutter.com summary
- What is here, and what is coming
- Questions and comments

Jamie Johnson

- jamie@jamiejohnson.ca www.itsAllAboutTheLight.ca
- Serious amateur photog since 1979, digital from 2000, RA Photo Club since 2004
- 35+ Tb of managed photo libraries
  - Nature, Sports, People, Events, Travel, Music, Family, Community
  - Some very high volume days
- Presentation will be shared and posted

My Biases for Photography

- High volume, minimal processing
- Select few images for web, fewer for printing, all with minimal processing
- Canon R6, Canon 5Div, Canon 1Dx ii, iPhone 13, Capture One, Photoshop, Macintosh
- It is all about the impact, so it is all about the light
- Engineer and software developer

Survey

- Film, Digital, Video
- 35mm, Micro 4/3, Smart phone, Medium format
- Lightroom, Photoshop, Capture One, Luminar, ACDSee, Photo Mechanic, Others

Theme for Today

- "Skate where the puck is going to be" Wayne Gretzky
- More technical than creative
  - Word processor does not make the writer
  - Pans do not make the cook

TheWireCutter.com

- TheWireCutter: Summary at the beginning, then details
- For pre-capture: the artists' intent
- For capture: look to what smart phones are doing now
- For post processing: computational photography

Steps in the Workflow

- Prepare - All good things are invented twice
- Capture - Chances favours only the prepared mind - Louis Pasteur
- Organize - Simplicity is the ultimate sophistication - Leonardo DaVinci
- Enhance - Pixels are meant to be punished - Frederik Van Johnson
- Share - Viewing art gives the same pleasure as falling in love - Semir Zeki

Tools in the Workflow

- Image Sensor
- Camera Body
- Lens
- User Interface
- Post Processing
- Sharing

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Image Sensors

- Captures photons of light, converts them to data
- CCD and CMOS
- Multi-layer, backlit, dual pixel
- Stabilized

Image Sensors

- Sizes (phone, micro 4/3, APS-C, full frame, med format)
  - 26mm^2 to 2100mm^2

- Is bigger better, or what is good enough?

Image Sensors

- Number and size of pixels
  - Phase One ▶100 MP - 4.6µm
  - Canon R5 ▶45 MP - 4.5µm
  - iPhone 13 ▶12 MP - 1.4µm
  - Is more better, or is bigger better?
- What is the plan for sharing?

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Camera Body Directions Technical

- Size and weight
  - Micro 4/3 did not continue to smaller bodies, full frame for bokeh
- Ergonomics - muscle memory for incumbent
  - Brand lock-in
- Weather/water proofing
  - No such thing as bad weather, just inappropriate gear

Camera Body Directions Technical

- DSLR to mirrorless (another terrible marketing name)
  - Higher frame rates and no blackout periods
- Full time connectivity
  - To upload and backup photos
- Multiple simultaneous images at 30fps
  - Bracketing for shutter speed, aperture, focus points

Camera Body Directions Technical

- Eye control autofocus
  - Look where the focus should be

Camera Body Directions Artistic

- Apps in the camera
  - New functionality for specific needs
  - Explore the artist's intent
  - With AI understand the content, provide suggestions for poses, shutter speed, depth of field
  - Linked to smart phone

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Lenses

- Fixed vs. Zoom?
  - Supercomputers have changed the rules
- Mirror less has changed the rules
  - Aperture of less than 1.0
- How many lenses do you need?
  - How many at once?

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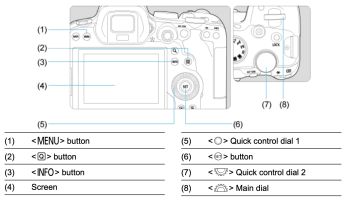
User Interface and Software

- Physical Interface



User Interface and Software

- Hardware Interface
  - Shutter, Aperture, ISO, White balance, Auto focus style, Drive mode
  - Auto-focus points, focus location
  - Auto focus, focus range, style of stabilization for lens

Physical Interface - Directions

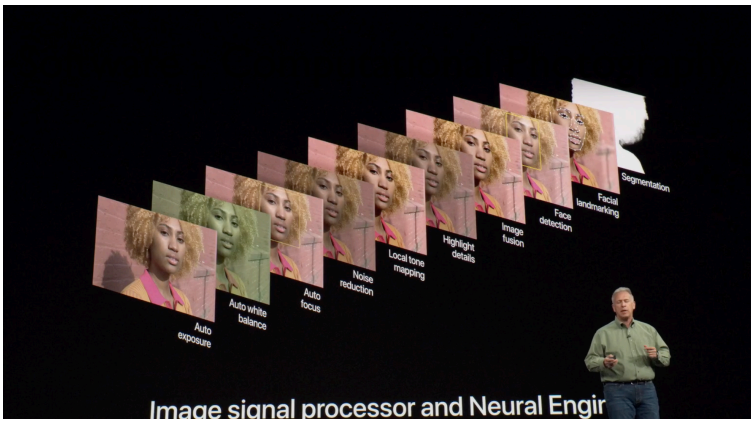
- Better than hierarchial interface on back touch screen
  - Settings start at type of photo
  - ML examines photos being taken and suggests
- Settings AI driven from apps on Smart Phones
  - Settings come from describing the subject and type of image
  - Adjusted by AI and Machine Learning

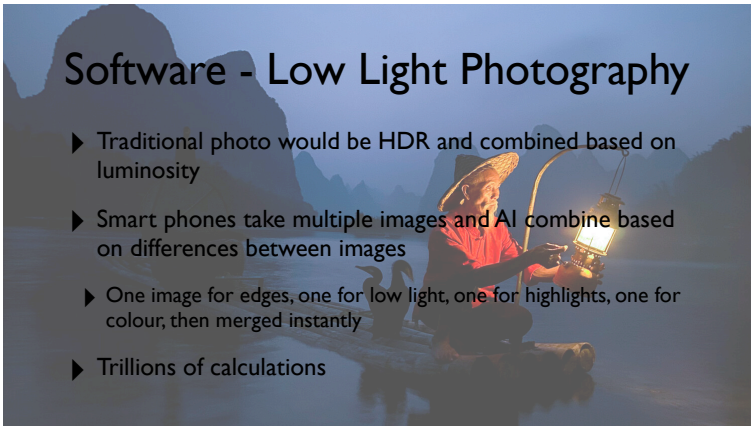
User Interface and Software

- Software Interface
- C004.pdf for the Canon R6, 877 pages
- 41 Menu settings for just Camera, 21 for AF, 24 for Playback, 8 for Wireless, 32 for Setup, 30 for Custom Functions

Software Interface - Directions

- Apps on the camera
- Eye control
- Auto HDR
- Live photos
- Presets for intent (like focus presets)
- Computational photography





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Post Processing

- To alter (a digital image) with Photoshop software or other image-editing software especially in a way that distorts reality (as for deliberately deceptive purposes). Merriam Webster
- Image processing manipulates, enhances, and transforms digital files. - Wikipedia
- Techniques used by a photo artist to produce images that display or enhance reality to create impact - Jamie

Processing Memes

- Get it right in the camera
- Available light shooter
  - Alternatively: Any available light shooter
- "Can you just Photoshop that for me"

Processing stages

- Pre-capture: preparation, equipment selection, technique selection
- Capture: In camera techniques and software
- Post: Computer/phone/tablet based software

Pre-Capture

- What is the Artist's Intent?
- Thanks Bill Young for the question from RA Feedback sessions
- What do you want the viewer to feel/think on viewing the image?
- What could be done to the image to help create that feeling and thought?

The Artist's Intent in Advance

- What to change and why, is harder than how
- "Computers are useless. They can only give you answers." Pablo Picasso
- Capture One | Live: Edits - 10 videos that talk about intent
  - www.youtube.com/playlist?list=PLBZS3EGK3tQ_92FFyTGT3mfiC3FlsNbcR
- Daily Critique www.tmelive.com/index.php/articles/3.html

Pre-Capture - Where is the puck

- Lens selection: Fish eye to super telephoto, tilt and shift, anamorphic
- Filters (polarizers, ND, GND, colours, star burst)
- Supplemental lighting
- Angle and framing of the subject

Pre-Capture - Where is the Puck Going?

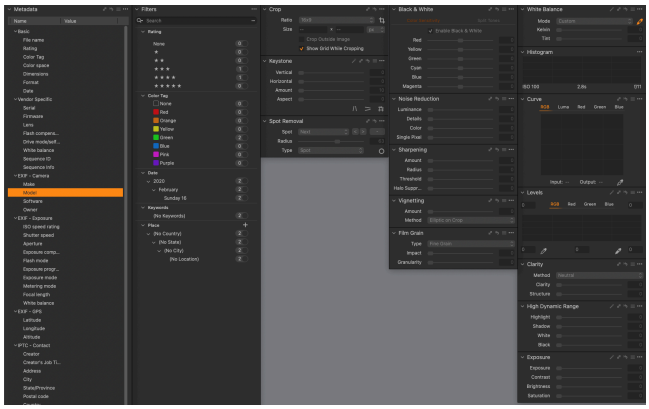
- "The future is here, it is just no very evenly distributed" William Gibson
- What are smart phones doing now?
  - Multiple lens available at the same time with digital zoom
  - Dust and water protection (IP68)
  - LiDAR (light detection and ranging) for focusing
  - Auto horizon for level shots

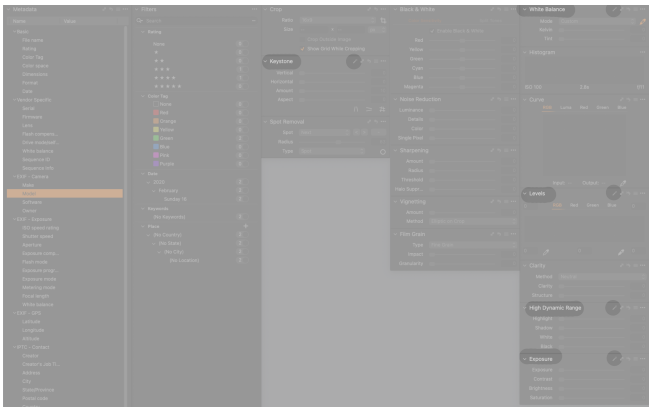
Post Processing

- The only processing most people think of
- Done with software on a personal computer, tablet, smart phone
- Deliver on the artist's intent

Post Processing

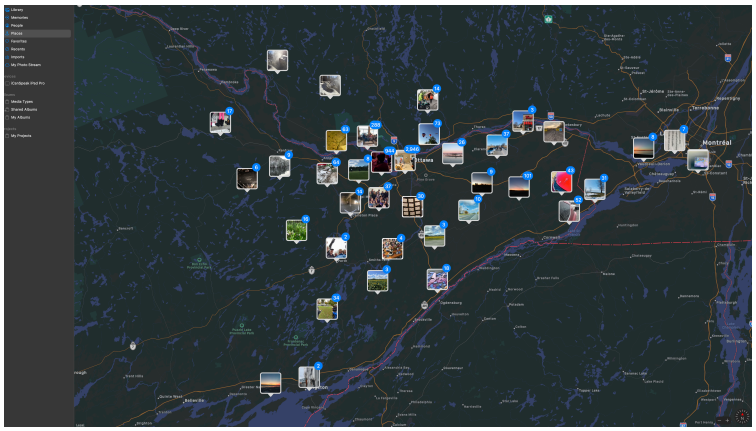
- Light: Exposure, Contrast, Brightness, Levels, Curves, Shadow, Highlights
- Colour: White balance, Colour grading, Saturation, Levels, Curves, ICC profile, Black and white
- Texture: Clarity, Structure, Noise, Sharpening, Film Grain
- Composition: Cropping, Keystone, Compositing, Bokeh
- Presentation: Spot removal, Vignetting, Lens adjustments, Moire, Purple fringing

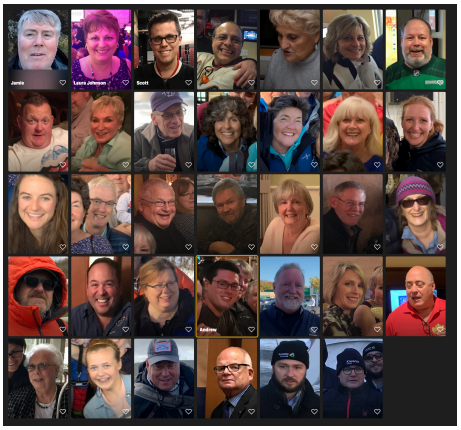




Post Processing

- Data base: GPS location, IPTC
- Data base: Rating, Descriptions, Keywording, Location
  - Image recognition and labelling





Where is the Puck?

- Smart adjustments (one click) for clarity, saturation, levels, highlights and shadows, levelling, framing
- Recipes for performing repeated actions
- Copy and apply for styles and presets
- Thousands of free and paid online tutorials

Cars - Levels of Automation

- 1 - Assistance - one at a time (lane keeping, braking)
- 2 - Partial automation - multiple functions at a time
- 3 - Human supervision of vehicle initiation of multiple functions
- 4 - "Minds off vehicle in control" - location restricted
- 5 - Full automation

Post - Where is the Puck Going?

- Documentary post processing that applies the rules
  - Rule of thirds, balanced elements, symmetry, repeating patterns, background, layers, fill the frame, rule of odds, sharpness and bokeh
  - Easy to automate (level 1 - 3)
- Auto white balance
- Clarity
- Sky replacement

Post - Where is the Puck Going?

- Artistic post processing that bends the rules
  - Composite images, reframing objects, negative space
  - Harder to automate (level 5)

Audio - Where is the Puck Going?

- Background hum ≈ noise reduction
- Clicks and pops ≈ dust spots
- Autotune for voice ≈ styles and presets
  - Provides creative suggestions
- Sampling ≈ this photo, in that style

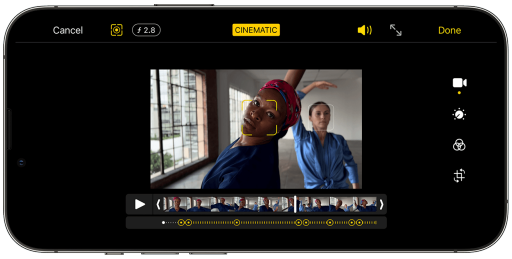
Post - Where is the Puck Going?

- Editing on location, on mobile device
- Auto curating (needed with 30 fps and eye control)
- Adjusting focus after capture
- Computational photography

Capture Multiple Focus Points

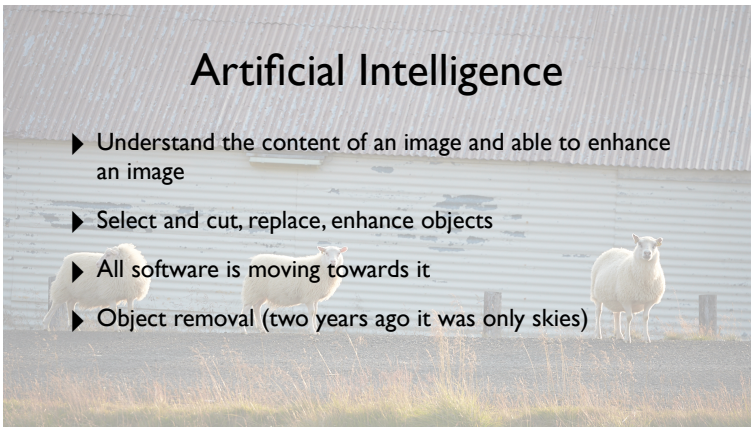
- Depth maps now used in front facing cameras
- Able to refocus after capture
- iPhone 13 does it for video, at 60fps

Capture - Focus in Post



Post - Where is the Puck Going?

- Artificial Intelligence
  - The ability for software to 'understand' what is the content an image
  - Auto tagging for keywords or other meta data
  - Facial recognition, people and pets
  - Pick the photos with people's eyes being open
  - Location recognition



Post - Where is the Puck Going?

- Machine Learning
- Software that learn what you want by studying what you do
  - Learns how you do sunsets, people, birds
- Privacy issue for where software does the learning

Post Processing Summary

- Overall: Lots of manual tools for the artists' intent
- Where the puck is going to be?
- For pre-capture: Multiple lens available at the same time with digital zoom, water protection, inexpensive lenses
- For capture: Computational photography, in the camera
- For post processing: AI and ML for everything

Tools in the Workflow

- Image Sensor
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Sharing - Directions

- Social, web sites, backups
- Simpler, faster, constant
- AI/ML based descriptions, keywording

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- For pre-capture: the artist's intent in advance
- For capture: look to what smart phones are doing now
- For post processing: AI and ML for everything
- "Skate where the puck is going to be" Wayne Gretzky

Editorial Comments

- Are smart phones really the future?
  - Apps, LiDar and vision, auto HDR, focus in post, edit on device, share from device point to a future
- Why are we all not shooting medium format 100Mpx?
  - Full frame digital is good enough, APS-C is good enough, Micro 4/3 is good enough …
- My concern: 4 years for Canon, Nikon, Sony to develop a new camera, with only their software

Editorial Comments

- Do we want AI/ML software making changes for us?
  - Technical vs Artistic
  - Spam email vs. spam phone calls?
  - Face and eye focus?
  - Content aware fill use to be a joke
- The artist's intent can overrule/blend the AI/ML

Thanks!

- Questions or comments?