Thinking through the Lens Zoo website

1: Exploring Images
1 versus 2 stages

• Keeping different users in mind
  • Casual (classification only)
  • Interested (classification & some discussion)
  • Expert (classification, discussion, moderation, advice)

• 2 stage process
  • Classification
  • More detailed interaction
    • Discussion (later)

• This discussion
  • Focus on a wishlist of features/functionalities
  • Testing during development?
  • Ideas only, open to suggestions, criticism and new ideas
what images to look at and what to do with them?

• sizes of the images
  • - how large is too large? -
   • optimised to the largest arc possible based on the cluster catalogue (CFHT search only)
  • should the size be the same for the blind search and targeted search? if not, what to do?
   • - will be defined by the science goal, no need to be uniform- targeted size optimised to einstein radius of the lens, or defined by group scale

• zoom feature - what level of zoom and how to implement ?
  • 2 types of operability
    • - basic zoom for initial classification, free format zoom for 2nd stage.
  • how do we capture the view that leads to the classification (i.e. the view the user sees before he says yes that's a lens) - do we need this info?
  • If not an image, we do need to record at least an x & y image coordinate of where the potential lens has been seen.

• contrast feature
  • can this be implemented at a basic and advanced level for stage 1 & 2
  • is this useful or time consuming
  • what's the loss of potential candidates if we only offer a fixed contrast (test with faint arcs/images)
CFHT images

• Anupreeta’s examples
• Show only colour, only single bands, only greyscale or some combination of all?
  • -how best do we optimise this for stage 1 and stage 2
• There will also be future searches, the interface needs to be flexible enough to apply to & provide the best image displays for the future surveys
single vs multiple images

• Should users be able to choose what they want to see?
  • color composites or on the fly creation of composites as desired by the user
• in stage 1, if users are looking through 1000s of images then do we show 1 image per page, or n images per page
  • do we let them choose how many are instantaneously shown?
  • balance of getting through large number of images versus speed
• should we use a timer for
  • blind survey
  • targeted survey
fits viewer, sliders

- should we show color jpegs or files in FITS format?
  - sounds like javascript is fast enough to make colour jpegs on the fly
  - Do we want to also capture the image setting that the user made the classification on
- how much control should be provided to the user to play with the contrast, dynamic range, brightness?
  - how would this affect various users' judgement
  - affect time performance (some might spend too much time playing with the images)?
    - basic minimum functions stage 1,
    - free functions at stage 2
    - MT: GUI for RGB creation
- capturing views when a system is discovered
User interface for RGB composites (MT)

- Arrange available filters in an annulus
- Have 3 sliders—one each for R, G, and B channels—arranged like hands of a clock, to select filters
- Hands are also sliders to adjust eg contrast of each channel
- The azimuthal position of each hand/slider within a filter sector can be used as secondary adjustment of the corresponding RGB channel
annotating the images

• do we need to ask users to mark and draw where they see lensed images?
  • - do we need this at stage 1 and/or stage 2
  • if yes, do we provide multiple colors for multiple detections?
• how do we handle or post-process such annotations?
• do we need to draw the markings or just tag their positions?
  • Tagging the lensed image positions more critical (stage 1)
  • Especially if multiple components seen
  • Centres or extents of images?
• drawings of multiple users and create an average shape of the lensed feature
  • Weighting of lenses features – critical for discussion (Stage 2)
  • Automatic mass modelling for some systems
  • tagging other unusual stuff in the images
• measuring separations
• colours/feature/morphologies buttons
changing tasks?

• Cecile: Solar stormwatch where everytime you login, you are given different kind of tasks to be done
  • Is this kind of feature required?
  • Does this have any parallels to LZ? If yes, explain.
    • Keep users engaged with differing tasks
    • Perhaps reduce the boredom with low number discoveries
• Keep a log of what tasks have been completed
• Keep a log of what systems users have been “talking” about
feedback

• Instant feedback
  • Robot (zoonibot-like) messages
    • Known lenses
    • False positives

• Scoring

• Rating of
  • Systems
  • Comments in talk

• Featured systems
  • Those we think need more discussion
  • Sufficient classifications then remove
What features would you like to see on a custom-built website for gravitational lens identification?

- **Image Manipulation & Display**
  - SDSS like interface (explore)
    - Zoom in & out
    - Invert image
    - Navigate
  - Contrast control
  - Meta-data
  - Tool to measure the lens/image separation
    - Ability to store measurements of multiple images/arcs
  - Multi-wavelength fits viewer
    - Post/record different colour combinations?

- **Image size**
  - Same or scaled?

- **Buttons for**
  - arcs vs qso’s
  - Colours
  - Detail(s) in the arc

- **See an arc but is likely**
  - Neighbouring galaxy
  - Spiral arm
  - Star-forming ring
  - Tidal feature
  - In-situ SF

- **Talk:**
  - Who’s online
  - Rate comments to promote comment visibility (rises to top)

- **Examples:**
  - true lenses
  - false positives
  - Don’t miss non-standard/complex lens images