Emerging Technologies & Applications (Image Processing, Visualization & Analysis)

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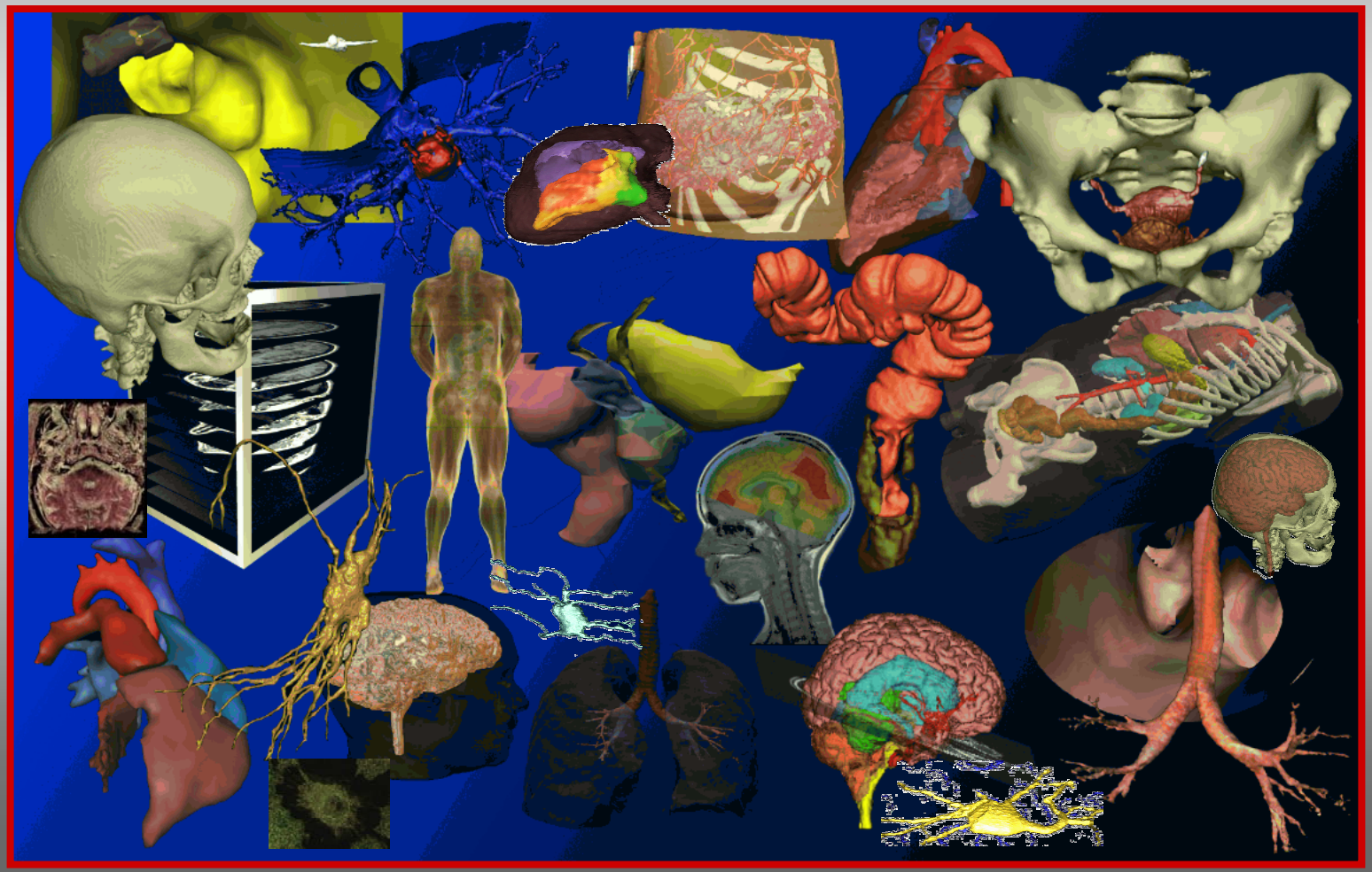
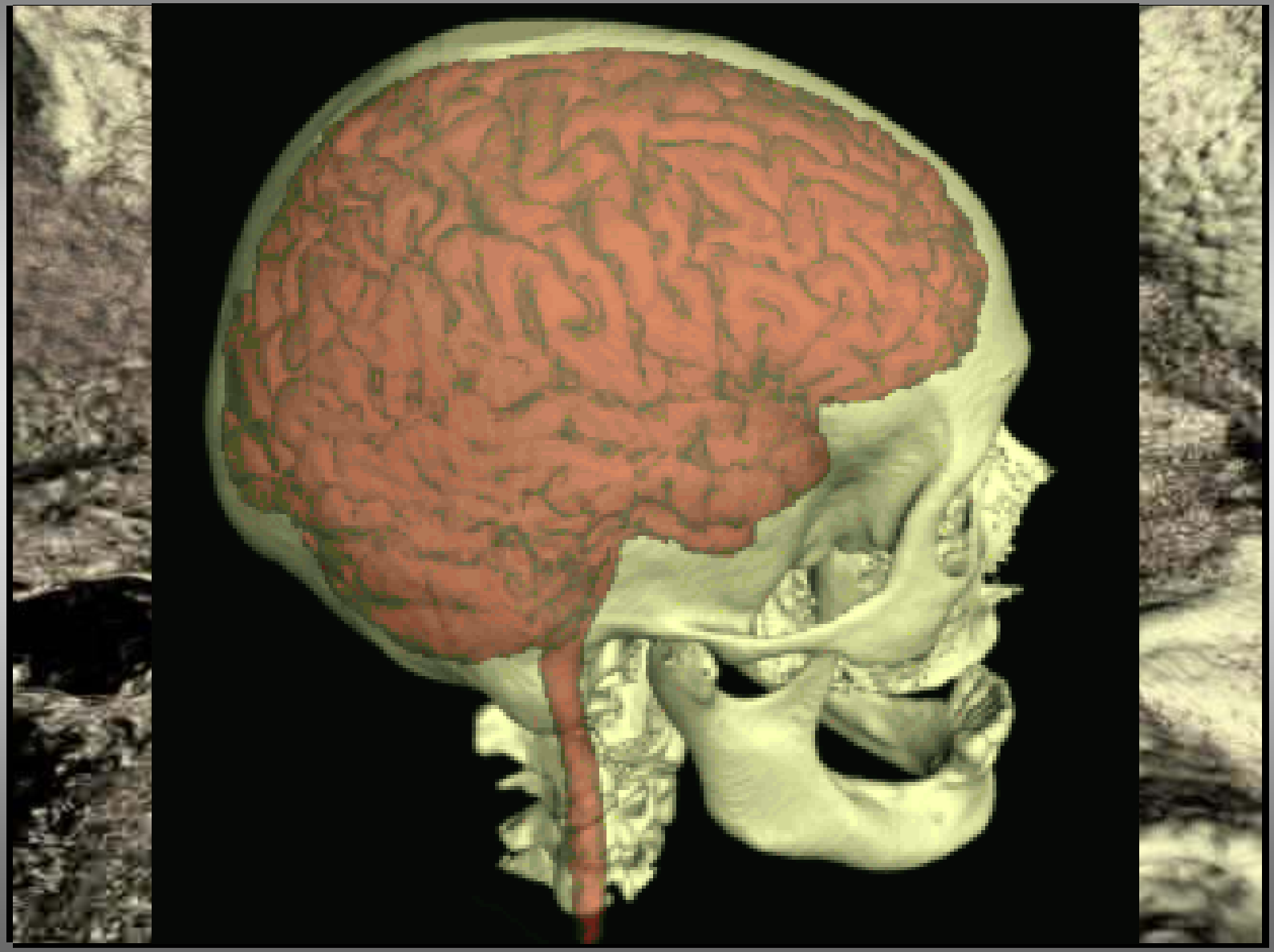


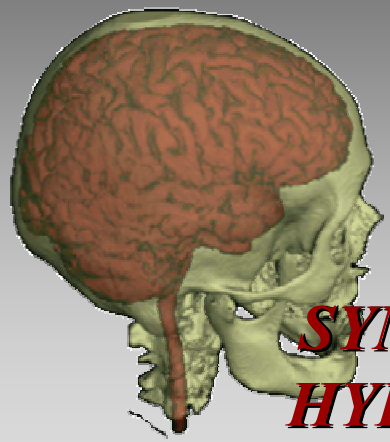
My Top Ten List
(Unsolved Problems, Unresolved Issues)

1. **Fusion:** seamless virtual to real, function to structure, genome to phenome
2. **Processing:** filtering, segmentation, registration, rendering, modeling
3. **Visualization:** 3D display, interactive manipulation (low latency)
4. **Analysis:** volumes, statistics, 'biophysichemical' properties (elastography)
5. **Imaging:** molecular, optical, magnetic, hires (spatial, contrast, temporal)
6. **Evaluation:** accuracy, precision, uncertainty, false p/n, outcomes, users
7. **Standards:** hardware, software, data formats, plug n' play platforms
8. **Interfaces:** machine & man, task analysis, iterative design, usability
9. **Robotics:** image-guided simple assistants, micro manipulators, precision
10. **Probes:** smart nano/micro "bots" (find, monitor, destroy, repair)

Processing & Visualization

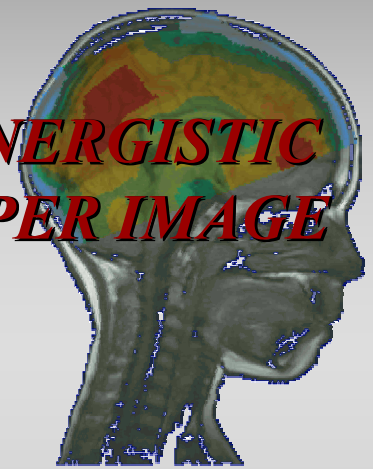


Fusion of Image Feature & Scale Space: Macro to Micro

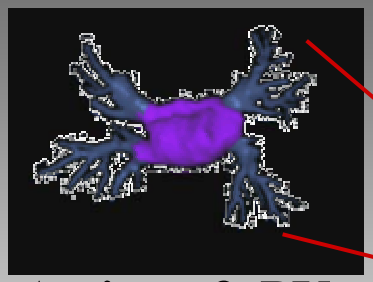


CT + MRI

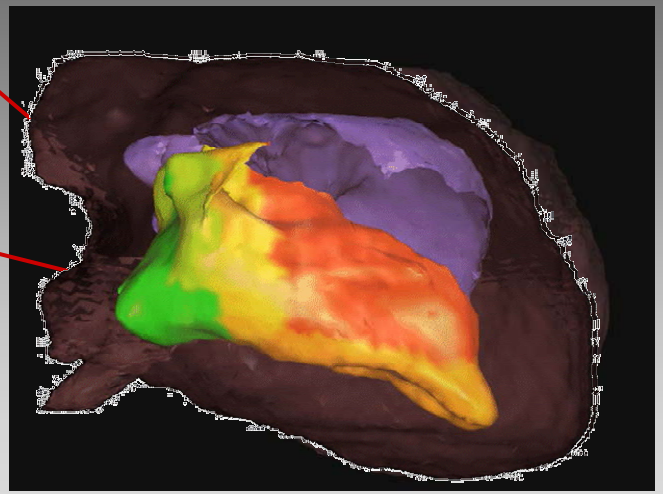
SYNERGISTIC HYPER IMAGE



MRI + PET



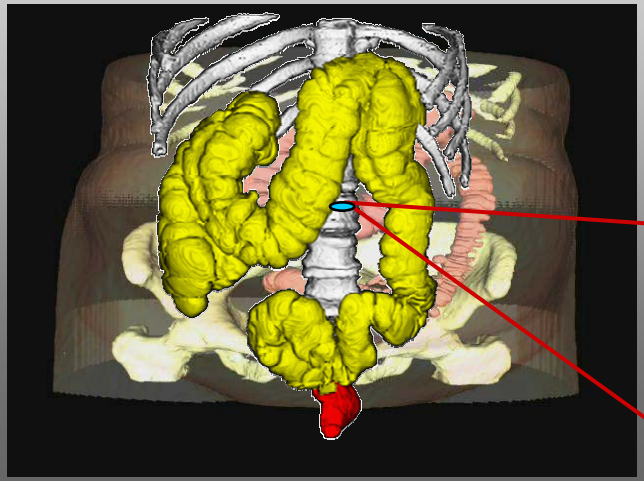
Atrium & PV



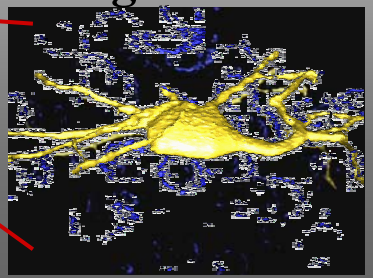
Heart & Activation

MRI + fMRI

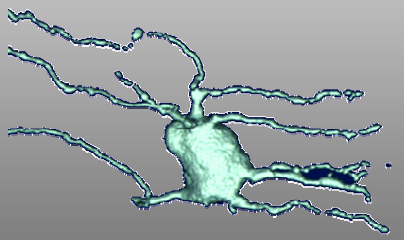
Colon



Single Neuron



Micro CT



Confocal MIC

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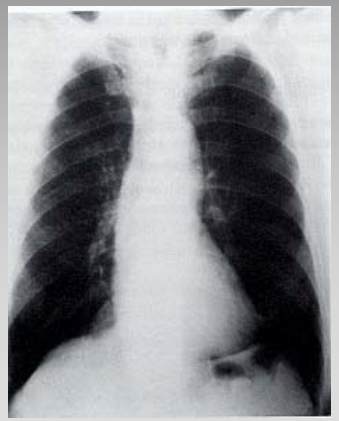
Just A "Wish List" ?

How To Make Wishes Come True ⇒

Elements For Progress

It might not always be easy, but we make progress with ….



Past ⇄ **Future**

ideas

tools

…and hard (team) work…

…and NIBIB Funding!!

“The only easy day was yesterday!” (US Navy Seal Motto)