

Connection of a JEM-ARM200F electron microscope to an advanced visualization system

Goals: The immediate purpose of this project is to connect the JEM-ARM200F electron microscope, also known as Henelita, to an advanced visualization system, Nemo, in order to have a three dimensional view of the atomic structure which will revolutionize the nanotechnology research industry.

Brief Description: This project will associate the center for simulation, visualization and real time prediction (SiViRT) and the international center for nanotechnology research. A physical connection is being established through an additional workstation assigned a static IP-address serving as a bridge between both laboratories. With the help of a File Transfer Protocol, the transfer of data should be done automatically which could pave way to a live streaming in the future. The data received are also going to be processed through image enhancement in order to meet expectations and solve problems faced by researchers in the medical field.

Heights of Achievements

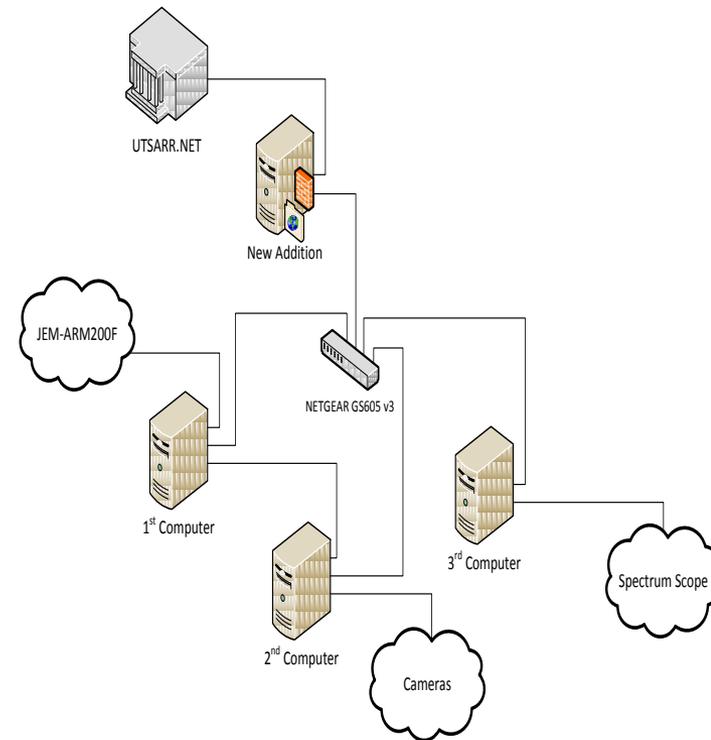
- . Connect both devices located in different buildings across campus.
- . Process images received to meet researchers specifications
- . Establish a remote live streaming of the microscope on the advanced visualization system.

The problems faced are both involving hardware and software. Concerning the hardware, the microscope is being operated by three 32bit workstations using windows XP. The machines used in the vizlab are 64bit and windows7. The differences in the technologies between both labs have to be compensated by either hardware (new workstation) or software (virtual system, and firewall update). Safety has also been a major concern preventing from going further in the project. In fact, considering the importance of the microscope and its value, the connection has to be made risk free.

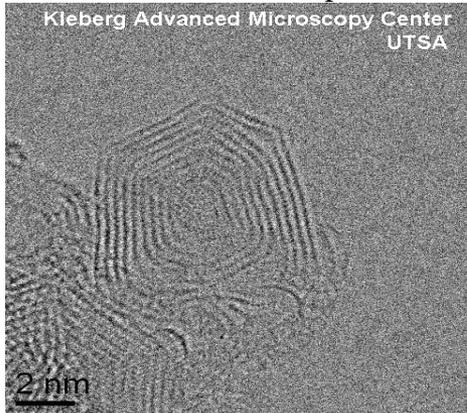
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Process used for Physical connection



JERM-ARM200F and sample of data acquired



Advanced visualization system and example of image processing method