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Meeting Report

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Computer aided three dimensional reconstruction course, March 7-8, 2003, Hacettepe University, Ankara, Turkey

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One of the most ancient of sciences, anatomy has evolved over many centuries. Its methods have progressively encompassed dissection instruments, manual illustration, stains, microscopes, cameras and photography, and digital imaging systems. Like many other more modern scientific disciplines in the late 20th century, anatomy has also benefited from the revolutionary development of digital computers and their automated information management and analytical capabilities. By using newer methods of computer and information sciences, anatomists have made outstanding contributions to science, medicine, and education. In that regard, there is a strong rationale for recognizing anatomical informatics as a proper subdiscipline of anatomy. A high-level survey of the field reveals important anatomical applications of computer sciences methods in imaging, image processing and visualization, virtual reality, modeling and simulation, structural database processing, networking, and artificial intelligence [1].

Within this framework, computer aided three dimensional (3D) reconstruction course was held on March 7 and 8, 2003 at Department of Anatomy, Faculty of Medicine, Hacettepe University as a part of continuing medical education activities. The course coordinators were Ruhgun Basar and M. Mustafa Aldur. The goal of this course was to inform researchers about the basic principles of 3D reconstruction and its wide range usage in neuroanatomy; and to provide them an opportunity for making practice with Surfdriver software. 30 participants from anatomists, dentists, engineers and students attended the course.

Ruhgun Basar started and chaired the plenary session on the first morning by welcoming the attendees. The first presentation by H. Hamdi Celik was on the history of three dimensional reconstruction. He summerized the detailed and very interesting history of 3D reconstruction since Leonardo Da Vinci up today including its story in our country. Following M. Mustafa Aldur presented the basic principles in 3D recontruction and possible problems that can be rised during performing reconstructions. He mentioned the importance of tracing contours, obtaining wireframe images, surface rendering; and explained how to correct misalignments and rotational problems. The third presentation by Alp Bayramoglu was on the computer softwares used for performing 3D reconstructions. He gave an excellent overview about the softwares including their fields of use and prices. In the following presentation, Selcuk Surucu described that a space image with true spatial perception could only be conveyed with two lenses and imitating the eyes; and this is called streoscopy. Additionally he demonstrated many neuroanatomical samples with and without streoscopic efects. During the session Iskender Sayek, Dean of Faculty of Medicine, made a surprise visit and congratulated the organising committe with a meaningfull plaque.

After a fifteen minute coffee break the second part of the plenary session started with the presentation by Mustafa F. Sargon on the 3D reconstruction of semi-thin and thin serial sections. He gave detailed information about the reconstruction processes with semi-thin and thin sections obtained for light, transmission electron and comfocal microscopy. The sixth presentation by Deniz Demiryurek was on The Visible Human Project by National Library of Medicine (NLM). He reviewed the project's history, its important role in providing a unique and important computerized database of the human body and being an international platform for general use as well as for research in many fields including neuroanatomy [2-6]. The following talks by Bulent Ozdemir, Ilkan Tatar, Samet Kapakin and Selcuk Tunali reported briefly the literature about computer aided 3D reconstruction and the fields of use of anaglyph technique. The last presentation of the plenary session by M. Mustafa Aldur was about SURFdriver 3.5, the surface reconstruction programme. He adressed SURFdriver software [7] as a powerfull tool for developing detailed morphological reconstructions of neuroanatomical features using sequential image slices through the structure. During the lunch break, the participants had the opportunity for discussing the plenary talks in detail.

The afternoon session and second day were devoted to reconstruction practicals. 30 attendees were divided into 10 groups. During one hour, each participant with a private computer and accompanying one demonstrator, performed splanchnic recontructions by following tracing, surfacing and adjusting steps. After final practical all those attending were given a cd-rom copy of presentations and a certificate of attendance.

The course was not all work and education. On the evening it was dining in a peacefull atmosphere, as participants gathered in the Senior Staff Lounge of Hacettepe University to sample delicious food and wine.

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This computer aided 3D reconstruction course was of great interest to the scientific research community. The quality of all of the presentations was exceedingly high and the discussion following each talk revealed an audience that was both informed and interested. The course series will continue based upon the new approaches in three-dimensional reconstruction techniques.

References

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