

Universidad de Granada

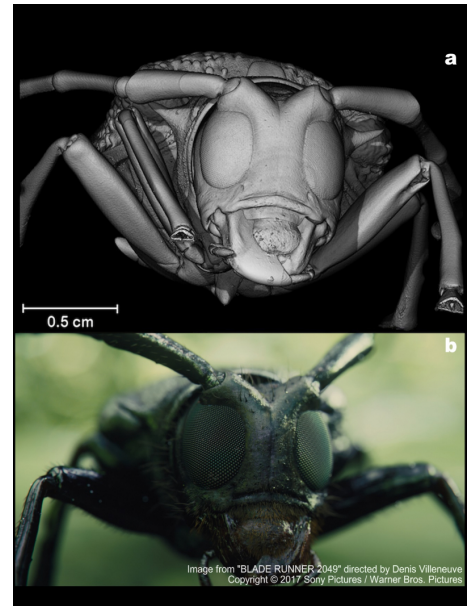
UGR scientist developed 3D scans of beetles for Blade Runner 2049

26/02/2018

Research news



Prof. Javier Alba-Tercedor next to the SkyScan 1172 scanner showing some of the specimens used to generate visual effects for Blade Runner 2049.



One of the main visual effects companies behind Blade Runner 2049, BUF, sought the collaboration of Javier Alba-Tercedor, a Professor of Zoology at the University of Granada, to obtain scans of different species of beetles used in the film's visual effects. Blade Runner 2049, directed by Denis Villeneuve, has earned 5 Oscar nominations as part of the 90th Academy Awards (2018), one of which is for Best Visual Effects.

Prof. Alba-Tercedor is an expert in computed microtomography, a technique capable of revealing the minutest details of insect anatomy thanks to the high-resolution 3D images it produces. He provided BUF with high-resolution microtomography images that served as the basis for the creation of the film's visual effects and 3D animations involving beetles.

Most of the specimens scanned for the film were tropical species from the longhorn beetle (Cerambycidae) family, which were sent from the offices of the BUF company in Paris to the laboratory of the Department of Zoology at the UGR. A species of darkling beetle (Tenebrionidae) known as *Zophobas morio* was also provided by Javier Pérez López, a researcher from the "Parque de las Ciencias" Science Museum in Granada.

Prof. Alba-Tercedor explains that: "At the beginning, I did not know that the scans of these insects would end up becoming part of the visual effects of *Blade Runner 2049*. I had never imagined that the skills acquired during my research career would be useful for the film industry."

The excellent quality of the results obtained is discernable in the scene in which the character of Dr. Ana Stelline employs a handheld device that can be used to rapidly manipulate shapes. To produce this scene, the technical team at BUF, using the scans provided by Prof. Alba-Tercedor, created photorealistic models of insects in which even microscopic structures, such as tiny hairs and eye features, can be discerned.

Each scan produced sequences of approximately 3,000 images, each of which had a resolution close to that of an ultrasound image. Using these materials, the BUF visual effects company then created lifelike 3D animations of the beetles.

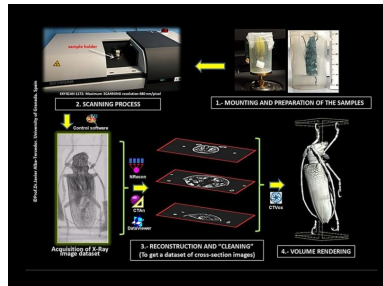
According to BUF, "the incredible results that can be seen in *Blade Runner 2049* show that microtomography represents a very valuable and accurate tool for reconstructing and producing computer-generated animations of tiny animals with microscopic structural details, such as the insect species used in this film."

"This project relied on synergies between microtomography and the visual effects industry and, ultimately, between the academic-scientific sphere and the entertainment industry", they add.

In recent years, Prof. Alba-Tercedor has been developing studies using computed microtomography to unravel mysteries that were previously unexplained, both in small animals and other materials and specimens. His outstanding work has earned him several international awards and mentions. Moreover, his work has been disseminated by media outlets across the globe. His contributions to *Blade Runner 2049* were included in a publication at the '2018 Bruker Micro-CT User Meeting'.

Bibliographical reference:

ALBA-TERCEDOR, J., BUFFIN, P., ROBERT, J, WISE, C. & LEPINE, P. (-in press, April 2018). Micro-CT as a valuable base tool for the industry of visual effects: the case of the animated beetles appearing in the film Blade Runner 2049. In: Bruker Micro-CT Users Meeting 2018. Kontich: Bruker micro-CT. 8 pp.



Micro-CT study mapping the process of scanning the beetles from start to finish.

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