

# 3D localization of pronuclei of human zygotes using textures from multiple focal planes.

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## **Abstract**

We propose a technique for recovering the position and depth of pronuclei of human zygotes, from Z-stacks acquired using Hoffman Modulation Contrast microscopy. We use Local Binary Pattern features for describing local texture, and integrate information from multiple neighboring areas of the stack, including those where the object to be detected would appear defocused; interestingly, such defocused areas provide very discriminative information for detection. Experimental results confirm the effectiveness of our approach, which allows one to derive new 3D measurements for improved scoring of zygotes during In Vitro Fertilization.