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Re: Thesis deposit from: Jordan Barkai | degree programme: Astronomy

1 message

Marc Verheijen <verheyen@astro.rug.nl> Wed, Jan 26, 2022 at 10:58 AM
To: FSE Repository Beheer <theses-fse@rug.nl>
Cc: "M.A.W. Verheijen" <verheyen@astro.rug.nl>

Good morning,

the MSc thesis of Jordan Barkai can be made public immediately without
any embargo.

Best regards,

Marc Verheijen

On Wed, Jan 26, 2022 at 09:39:08AM +0100, FSE Repository Beheer wrote:
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> <h1>Thesis deposit from: Jordan Barkai | degree programme: Astronomy</h1>
> Dear sir/madam,

On 26-01-2022 Jordan Barkai uploaded a paper in the FSE Thesis Repository. He/she indicated that this document should be publicly accessible on the internet.

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<hr/>Degree programme
Degree programme: Astronomy
Thesis type: Master's Thesis
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<hr/>Original title
A comparative study of source finding techniques in H i emission cubes using SoFiA, MTObjects and supervised deep learning
<hr/>Abstract of thesis
Astronomical surveys map the skies without a specific target, resulting in images containing many astronomical objects. As the technology used to create these surveys improves with projects like the SKA, an unprecedented amount of data will become available. Hence the need for fast and accurate techniques to detect and locate sources in astronomical survey data. The challenge lies in the lack of clarity in the boundaries of sources, with many having intensities very close to the noise, especially in the case of radio data. This project therefore aims to find the best source finding pipeline for 3D neutral h
ydrogen cubes from the Westerbork Synthesis Radio Telescope (WSRT). This was achieved by first testing two traditional source finding methods, the well established HI source finding tool SoFiA and one of the latest best performing optical source finding tools, MTObjects. A new supervised deep learning approach was also tested, in which a 3D convolutional neural network architecture, known as V-Net, originally designed for medical imaging was used. These three source finding methods were also further improved by adding classical machine learning classifiers as a post-processing step to remove any false positive detections.
<hr/>Number of pages: 87
Language of the thesis: English
Year of publication: 2022
Additional comments: I cannot fit the whole abstract here but that can be found in the report itself.
Indicate whether the document should be publicly accessible.: Yes (we'll ask your supervisor to confirm this)
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