

# RESEARCH ASSISTANT VACANCY

## PART A: PRINCIPLE INVESTIGATOR'S PARTICULARS

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## PART B: RESEARCH ASSISTANT'S REQUISITION

APPOINTMENT COMMENCEMENT DATE	As soon as possible
APPOINTMENT END DATE	One year initially, possible to be extended for another year depending on the performance.
CAMPUS LOCATION	UTAR Sungai Long
SALARY	RM 2500
EDUCATION LEVEL REQUIRED	Minimum Bachelor degree with CGPA of 2.5 and above
SPECIFIC SKILLS / KNOWLEDGE REQUIRED	Good in programming software such as Matlab
JOB DESCRIPTIONS	<p>Sound can be defined as the variation or fluctuation of air pressure in the air. Depending on the medium where sound travels, the compressed and expanded air pressure causes molecules in the medium to vibrate back and forth to generate a wave that is capable of transferring sound energy. When a sound hits an object, it causes small vibrations on the object's surface.</p> <p>This research intends to recover sound that produces these vibrations on the surface of an object by means of a video footage of the object of interest. The project will develop an algorithm based on the Eulerian phase-based approach to convert the small changes in motion and colour in videos which is hard to be perceived by the human naked eye or also known as subtle vibrations, to recover sound. With this new remote sound acquisition technique, many of the objects in normal surroundings can be turned into "visual" microphones as long as the audio signal is strong enough to generate the subtle vibrations on the object of interest.</p> <p>One of the motivations that inspire this research is to improve existing surveillance system and eventually reducing the crime rate. Most existing closed-circuit televisions (CCTVs), especially the ones installed in outdoor, only provide video monitoring without any audio signal. This opens up the opportunity for the developed algorithm to recover sound through imagery, where it gives users the ability to recover sound when necessary despite not having any audio input. The algorithm can provide an added value to the surveillance system as it can be easily implemented on the existing systems without any additional hardware thus providing another alternative in sound recording/recovering which is not possible previously. Besides the ease of implementation on the existing systems, it promotes flexibility in the method such that the audio can be recovered only when desired and reduces the need of storage as a prerequisite when compared to the conventional built-in microphone.</p> <p>The candidate is required:</p> <ul style="list-style-type: none"><li>- To improve a robust algorithm that is capable of converting vibrations to audible sound (codes will be provided)</li><li>- To recover sound from a few objects of interest using the developed algorithm.</li><li>- To study factors that can affect the quality of the recovered sound</li></ul> <p>* Successful candidate has to register for a Master of Engineering Science (by Research – full time) offered by LKC FES, UTAR. *</p>
REASONS / JUSTIFICATION FOR APPOINTMENT	<p>Selection criteria:</p> <ol style="list-style-type: none"><li>1. A Bachelor degree in any engineering, physics or a related discipline from a recognized tertiary institution with a minimum CGPA of 2.5 and above.</li><li>2. Excellent written and communication skills in English, at least band 4 and above in the MUET.</li><li>3. Experience in Linux platform and programming software such as Matlab and C/C++ are highly desirable.</li></ol>