**Article Review Comment Template**

* ***Use this document as a template to fill in your comment of the article review.***
* Rename the file name to “lastname\_firstname\_R\_number.doc”. For example, a student’s last name is “Lee”, first name is “Michael”, and the research paper number is 1, use the file name: “Lee\_Michael\_R1.docx”.
* Submit assignments to your instructor in a Microsoft Word or OpenOffice document. Other formats should be approved by the instructor prior to submission.
* **For each reading the comment should be in Arial 10, single space between lines.**
* All assignments are to be completed and uploaded into Blackboard no later than the due date. ***All assignments submitted after the due date will not be accepted.***
* Finish the assignment on your own. No points will be given for a copied assignment. Do the assignment as early as possible. Don’t wait until the last minute.
* If you are experiencing an emergency or difficulty with completing assignments on time, please contact the instructor as soon as possible.

Add tables if the number of readings is more than two.

**Last Name: Negash**

**First Name: Nem**

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| **Article reference in APA format (0.5)**: National University of Singapore. (2021, September 2). Brain-inspired memory device: Reconfigurable device can simplify semiconductor circuit design and enhance computational power and speed. ScienceDaily. Retrieved September 12, 2021 from www.sciencedaily.com/releases/2021/09/210902125037.htm |
| **Keywords used while searching for the article (0.5):** new computer science technology articles |
| **The most surprising or interesting point in the article (1):** The new electrical memory device has a circuitry system where the switch turns on and off at different sequential voltages unlike conventional systems that only have a fixed voltage level. |
| **The main issue being addressed by the article (1):** The article discuses a newly innovated memory device that is focused on overcoming the von Neumann neck bottle and is has an enhanced computational power and speed. It goes on to discuss the real-life applications of the device saying it would be very applicable in handheld devices where power is limited. |
| **The reason(s) this issue is of special importance (1):** This new technology can really innovate computing power for devices with limited power. This innovates handheld devices such as phones and laptops to have better battery life while also increasing computing power. |
| **List any explicit or implied (unstated) assumptions the article contains (1):**   1. the molecular device could be reconfigured using voltage to embed different computational tasks. 2. The new molecular device also has the potential to contribute to designing next generation processing chips with enhanced computational power and speed. |
| **From whose perspective is the article written, indicating whether it is unbiased (1):** The article is written based on an interview that was conducted with the research team. There seems to be no real bias in the article just more of a report on the conclusion of the research and what how it can be used in real life application. |
| **State the specific course concepts highlighted by the article (1):**  Undervolting: this is a method in which a hacker cuts the voltage by about 25 or 30 and cause the chip to make errors in the midst of computations that use secret data. And those errors can reveal information as sensitive as a cryptographic key or biometric data. This new technology mitigates against this since the voltage levels that can run is more of a range rather than a fixed voltage level |
| **Summarize the key information (data/evidence)** **provided in the article (1):**  Summary points:   1. the molecular device can be reconfigured using voltage to embed different computational tasks. 2. The idea of using multiple switching in a single element draws inspiration from how the brain works and fundamentally reimagines the design strategy of a logic circuit. 3. The new molecular device also has the potential to contribute to designing next generation processing chips with enhanced computational power and speed. 4. Unlike conventional metal-oxide memristors that are switched on and off at only one fixed voltage, these organic molecular devices could switch between on-off states at several discrete sequential voltages. 5. The researchers described the behavior of the molecules using a decision tree algorithm with "if-then-else" statements, which is used in the coding of several computer programs 6. The technology might first be used in handheld devices, like cell phones and sensors, and other applications where power is limited |
| **Conclusions reached by the author(s) and the extent to which you agree with these (1):**  The research can be utilized in the design of future processing chips to create energy efficient devices that also have powerful computing powers. It also protects from attackers using undervolting and also protect the chip from damages that can be caused by overclocking. I agree with all the points that are stated in the article since the research shows how the new technology can be used to improve the next generation of chips. |
| **Possible positive or negative implications of the article (1):**  The article has positive implications since it brings attention to the new technology that is developed. Companies that develop chips such as Intel or AMD could be interested after reading the article to incorporate this technology in their future chips. |
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