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Examination report No. 1 for your standard patent application

IIP Group Pty Ltd
168 Stirling Highway
Nedlands WA 6009
Australia

Application number 2021254524
Applicant name Brainchip Inc
Earliest priority date 01 November 2018
Your reference P10135AU.1

Final date for acceptance: 13 December 2022
Date of this report: 13 December 2021
Examination request date: 18 October 2021

Dear Applicant,

Your application has been examined under [section 45 of the Patents Act 1990](#). I consider that the application does not meet the requirements of the Act for the reasons indicated below.

What you need to do now

- Understand this examination report** – read through this report carefully to understand the issues identified.
- Overcome the issues** – you have until **13 December 2022** (12 months from the date of this report) to overcome all of the objections identified by the examiner in this examination report. If your response to this examination report does not overcome all of the examiner's objections, further adverse report(s) will be issued. If all objections in this (and any subsequent further reports) are not resolved by **13 December 2022**, your application will lapse and you will lose the opportunity to progress this application further.

Your progress

- Filed**
Application is filed
- Examination**
Application is being examined
- Acceptance**
Application is accepted
(enters an opposition period lasting 3 months)
- Grant**
Patent is granted
(patent is now enforceable)
- Continuation/Renewal**
Fees required to maintain application/patent
(fees are due annually – please refer to the 'paid to' date in AusPat for your next due date)

Need help?

Talk to Alex, our virtual assistant.

If you need further help, contact your examiner Olutope Omogbenigun on +61 2 6283 2876.

Make an enquiry or provide feedback on our [website](#).



3. **File your response promptly** – if you believe you can overcome the objections raised by the examiner in this (and any subsequent) examination report(s), please respond as soon as you are able. For more information on how to respond, see [Responding to an examination report](#) on our website. Please ensure that during the examination process you file your response(s) to allow sufficient time for IP Australia to consider it before the final date for acceptance. IP Australia will endeavour to either write another report, or accept your application, within 20 working days of receiving a response.

Things to be aware of

- **Monitor and pay your continuation fees** – fees are due annually. Your next continuation fee is due on **31 October 2023**. Information about fees may be obtained by visiting [time and costs](#) page on our website.
- **If you need to file a divisional application** – the divisional must be filed while the present application is in force (i.e. it is not lapsed, withdrawn or refused). If the present application is in force and has also been accepted, you must file your divisional application no later than 3 months from the date we advertised the acceptance of the present application. For more information on divisional applications, please see [Divisional applications](#) on our website.

You may like to know

- You may submit your response using [online services](#) or post.

Details of your patent application can be viewed on [AusPat](#), our Australian patent search database.

Yours sincerely,

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Report details

Basis of the report

In examining your application I have considered:

- the specification as filed

Summary of novelty, inventive step and patentable subject matter

	Satisfy requirements?	Claim numbers
Novelty/inventive step	Yes	NONE
	No	1-14 [IN-PART], 37
Patentable subject matter	Yes	1-37
	No	NONE

Detailed objections on issues that have been identified

Section 40 (support, disclosure, clarity, lack of unity)

- 1 The specification does not comply with Section 40(4) because the claims do not relate to one invention only. I have found different inventions based on the following features that separate the claims into distinct groups:

Claims 1-14 [in-part] and 37. The feature of *a memory comprising the neural network configuration, wherein the neural network configuration comprises a potential array and a plurality of synapses, the neural network configuration defines connections between the plurality of spiking neuron circuits and the plurality of synapses, the potential array comprising membrane potential values for the plurality of spiking neuron circuits, and the plurality of synapses having corresponding synaptic weights* is specific to this claim/group of claims.

Claims 1-14 [in-part] and 15-22. The feature of *determining that the membrane potential value associated with the spiking neuron circuit has reached a learning threshold value associated with the spiking neuron circuit; and performing a learning function based on the determination that the membrane potential value of the spiking neuron circuit has reached the learning threshold value associated with the spiking neuron circuit* is specific to this claim/group of claims.

Unity of invention is only fulfilled when there is at least one “special technical feature” present in the claims. This is a feature that both:

- provides a technical relationship among all the claims; and,
- makes a contribution over the prior art.

When there is no special technical feature there is no unity of invention.

In the above groups of claims, the identified distinguishing features may have the potential to make a contribution over the prior art but are not common to all the claims and therefore cannot provide the required technical relationship. The only feature common to all of the claims is a neuron fabric comprising a neural processor comprising a plurality of spiking neuron circuits configured to perform a task based on the spikes.

However it is considered that this feature is generic in this particular art. Therefore in this light this common feature cannot be a special technical feature. Hence there is no special technical feature present in the claims and the requirements for unity of invention are consequently not satisfied *a priori*.

I have limited the search and report to the invention defined by claims 1-14 [in-part] and claim 37. When I receive a response to my objections I may extend the search area and expand the report on the basis of my findings.

Documents cited or considered relevant

D1 : US 20180197075 A1 (INTERNATIONAL BUSINESS MACHINES CORPORATION) 12 July 2018 ^[1]

Category: **X** Claims: 1-14 [in-part], 37

D2 : US 20180189645 A1 (INTEL CORPORATION) 05 July 2018 ^[1]

Category: **X** Claims: 1-14 [in-part], 37

D3 : US 20160358067 A1 (INTERNATIONAL BUSINESS MACHINES CORPORATION) 08 December 2016 ^[1]

Category: **X** Claims: 1-14 [in-part], 37

^[1] Cited in the search/examination report of AU 2019372063

Special categories of cited documents:

X: The claimed invention cannot be considered novel under [subsection 7\(1\)](#) in light of the document and/or cannot be considered to involve an inventive step under [subsection 7\(2\)](#) of the Act in light of the common general knowledge considered together with the document.

Novelty and inventive step

2 The invention defined in claim 1 [in-part] and claim 37 is not novel (and does not involve an inventive step) when compared with prior art documents D1-D3 each of which discloses all the essential features of the invention claimed.

Regarding claim 37, D1 discloses a neuromorphic integrated circuit (abstract), comprising:

a spike converter configured to generate spikes from input data (paras 12, 16);

a reconfigurable neuron fabric comprising a neural processor comprising a plurality of spiking neuron circuits configured to perform a task based on the spikes and a neural network configuration (para 4; crossbar and router [i.e. fabric], see paras 14, 16, 24);

a memory comprising the neural network configuration, wherein the neural network

configuration comprises a potential array and a plurality of synapses, the neural network configuration defines connections between the plurality of spiking neuron circuits and the plurality of synapses, the potential array comprising membrane potential values for the plurality of spiking neuron circuits, and the plurality of synapses having corresponding synaptic weights (paras 16, 22, 35, 45, 49); and

a processor configured to modify the neural network configuration based on a plurality of configuration parameters (para 4).

The essential features of claim 37 are also disclosed in each of D2, D3 in the following passages:

D2: abstract, paras 40-47, 50-52, 58, 69, 70, 85, 86, 98

D3: abstract, paras 34, 36, 48, 56, 64-70, 78, Tables 4 & 5, where neuron reconfiguration control threshold [for a plurality of neurons] corresponds to potential array as claimed.

As noted in the Lack of Unity objection above, claim 1 recites two inventions, the first of which is the same as claim 37. Consequently, the first invention in claim 1 also lacks novelty for similar reasons as claim 37.

- 3 Furthermore, I have considered each of the appended claims 2-14. Each of these claims are not considered to make any patentable contribution over the teachings of the above cited documents D1-D3. The relevant features of these claims are either disclosed in D1-D3 or are common general knowledge in the art/mere design choices and which therefore cannot contribute to providing novelty or an inventive step. For example, D1 discloses the features of claims 3 and 4 (paras 4, 13, 50).

END OF REPORT