

Inter Partes Review U.S. Patent No. 10,971,140

Oral Argument, March 11, 2024

Apple Inc. v. Zentian Limited
Case No. IPR2023-00037

Petitioner's Demonstrative Exhibits – Not Evidence

Petitioner's DX-1

Claim 1 and Proposed Ground 1

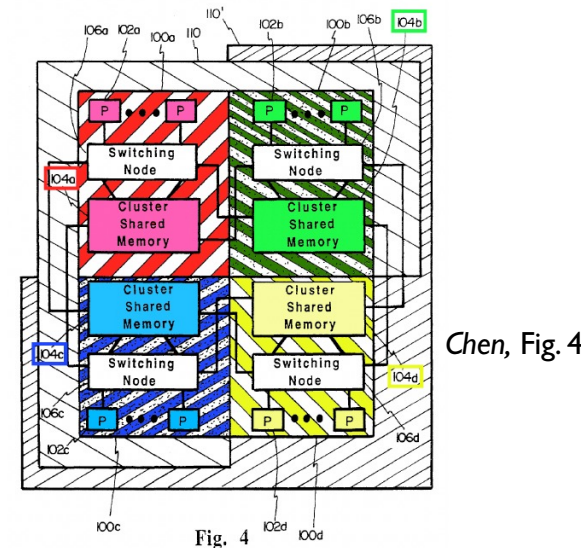
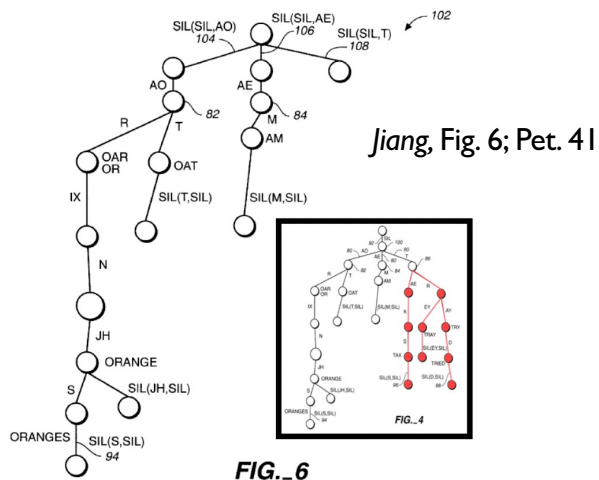
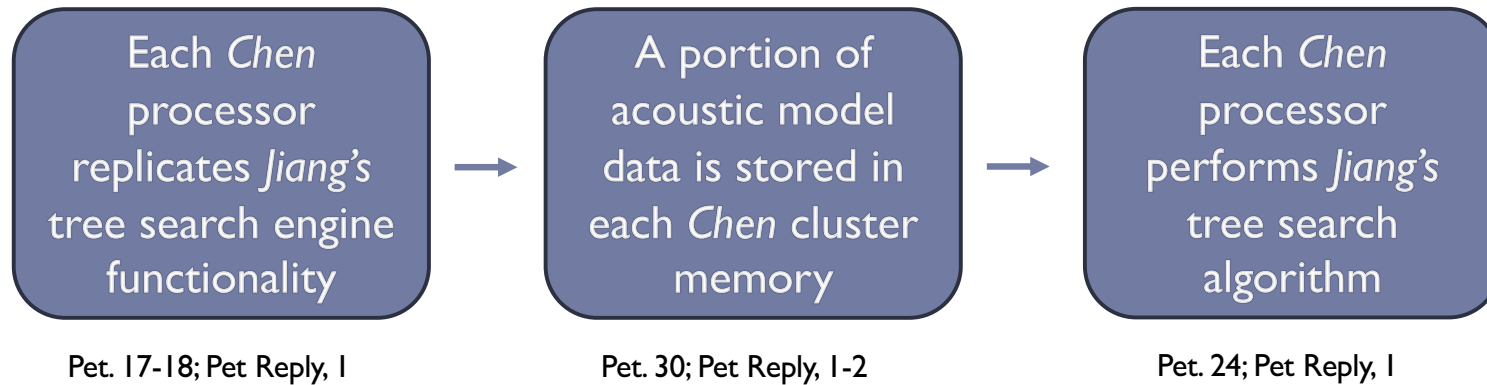
- ▶ Ground 1: Claims 1-3, 5, and 7-8
 - ▶ **Jiang** (Ex. 1004) in view of **Chen** (Ex. 1005)

Claim 1:

Claim Designation	Claim Language
Claim 1(Pre)	A speech recognition circuit comprising:
Claim 1(a)	one or more clusters of processors, each of the one or more clusters of processors comprising: a plurality of processors;
Claim 1(b)	and an acoustic model memory storing acoustic model data,
Claim 1(c)	wherein each of the plurality of processors is configured to compute a probability using the acoustic model data in the acoustic model memory,
Claim 1(d)	wherein: the speech recognition circuit is configured to generate an initial score for an audio sample;
Claim 1(e)	and the initial score is used to determine whether to continue processing to determine a final score via processing a larger amount of model data than that was processed to generate the initial score.

Petition's Combination of *Jiang-Chen*

► Petition Mapped:



Zentian's Arguments: Claims 1(d)-1(e)

▶ **Zentian Argues:**

- ▶ “No one processor in one cluster can directly or adjacently access ***all*** of the data stored across the four memories 104(a)-(d).”
POR, 33-34

▶ **Apple's Response:**

- ▶ Not Required (in the claim or the combination)
 - ▶ No need in the combination for a processor to be able to access all data from all cluster memories
- ▶ Zentian Is Requiring Bodily Incorporation

Pet. Reply, 2-3

Zentian's Sur-Reply Argument: Claims 1(d)-1(e)

~~Moreover, the *only* theory Mr. Schmandt offered at his deposition was that *one* processor in *one* cluster in Chen would have been used to generate the “initial score” of limitation 1(d) and to determine whether to continue processing as recited in limitation 1(e). Ex. 2017 at 102:5-103:3.~~

PO Sur-Reply, I-2

Schmandt's Opinions Regarding the Results of Jiang's Tree Search

Q. Okay.

So do you have an explanation in your declaration of what happens next in Chen's processors after they've split up the tasks so that each processor is doing a part of the A through Z sort of analysis?

A. I don't explicitly say that the results are then merged, but if we're going to be doing pruning based on thresholds, then we have to know the scores that we got on each of the trees, so I think that's a safe assumption, that that's in there. So when each of the processors has performed its task on its set of trees, it can produce a set of numbers, and looking at the numbers across all of the processors, across all of the results, we can choose a pruning threshold just like Jiang chooses a pruning threshold after it performs all these operations in serial as opposed to parallel.

Schmandt Depo.Tr. (Ex. 2017), 101:4-23

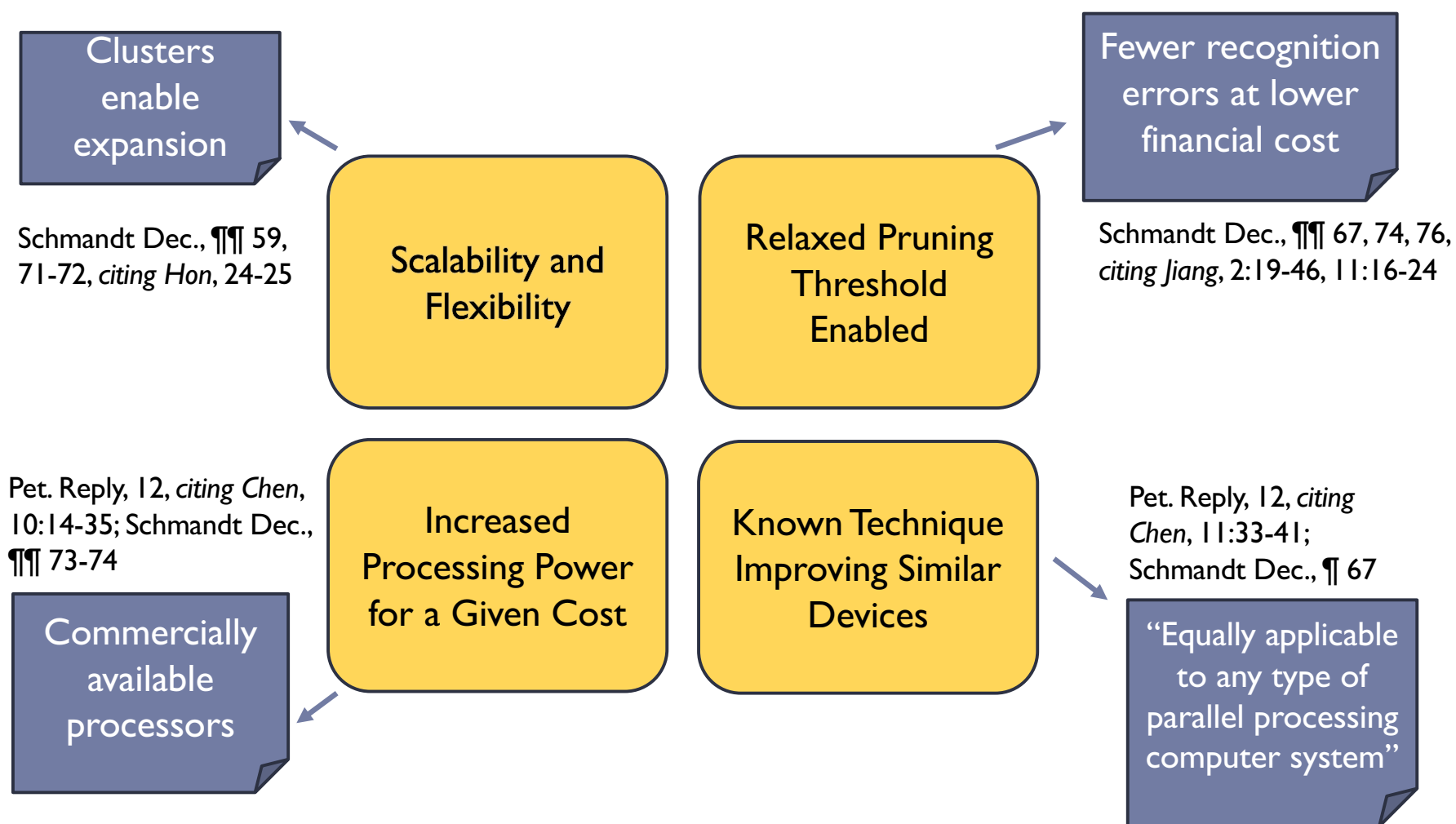
Q. Let's take a look at -- withdrawn.

Just so I'm clear, your testimony now at your deposition is that the result would be compiling or scored in one processor within one cluster in Jiang -- in Chen -- excuse me -- for instance; is that fair?

A. Yes. At that point we have finished our parallel operation and we're back to serial operations.

Schmandt Depo.Tr., 102:17–103:3

Motivations to Combine



Chen's Memory Access

▶ Zentian Argues:

- ▶ Extensive communication between computational components required

POR, 14



▶ Petition Mapped:

- ▶ *Jiang's* algorithm replicated across each processor

Pet. Reply, 1



- ▶ No communication between *some of Chen's* processors and memories

POR, 16



- ▶ Switching nodes 106a-d allow "direct and symmetrical access" by all processors of each cluster to shared memory

Pet. Reply, 17, 27

- ▶ Adjacent and non-adjacent clusters are communicatively connected

Pet. Reply, 17

Zentian's Unclaimed and Undescribed Implementation Details

- ▶ **Avoiding Memory Conflicts**  **NO DISCLOSURE**
- ▶ **Task Sharing**  **NO DISCLOSURE**
- ▶ **Resolving Bottlenecks**  **NO DISCLOSURE**
- ▶ **Messaging Strategy**  **NO DISCLOSURE**
- ▶ **Bandwidth and Latency Issues**



Single Sentence of Disclosure:

'140 Patent, 4:1-6

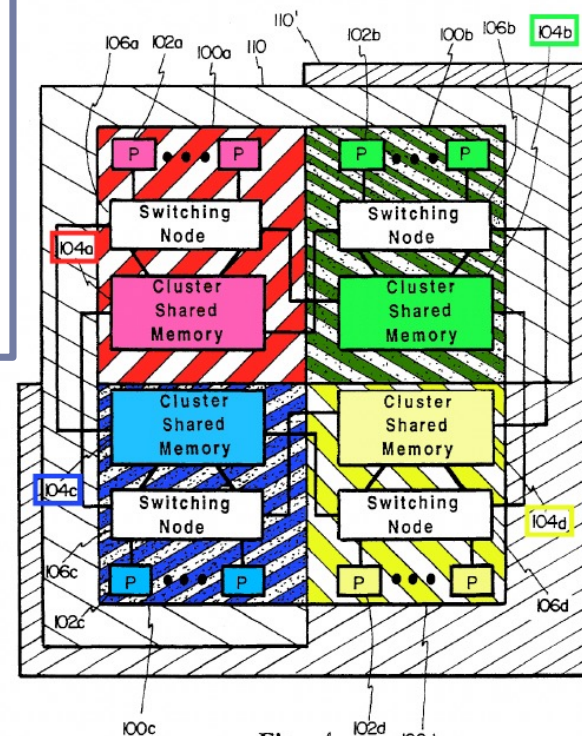
By providing a plurality of processors in a group with a common memory, flexibility in the processing is provided without being bandwidth limited by the interface to the memory that would occur if only a single memory were used for all processors.

Zentian's Alleged Reprogramming Effort

► **Chen's Shared Memory Model**

Thus, in the mapped combination, there are multiple, clustered processors, with each cluster of processors sharing a single memory. This architecture is a shared memory model per *Chen's* definition and does not require any significant reprogramming effort. *Chen*, 5:20-25 (“[a] shared memory model can be used with programs that can be executed in the cluster shared memory of a single cluster”).

Pet. Reply, 26-27



Chen, Fig. 4 (Annotated)

Fig. 4

Level of Skill of a POSITA

► The Parties Agree:

D. Level of Skill of a POSITA

A POSITA at the time of the '319 Patent would have had a master's degree in computer engineering, computer science, electrical engineering, or a related field, with at least two years of experience in the field of speech recognition, or a bachelor's degree in the same fields with at least four years of experience in the field of speech recognition. Additional education or experience might substitute for the above requirements. *Dec.*, 24-26.¹

Level of Skill of a POSITA – No Disputes

▶ Zentian **DOES NOT**:

▶ Dispute the Level of Skill

Q. Okay. Do you dispute that this is a correct level of skill for the 140 and the 319 patents?

A. I do not.

Anderson Depo.Tr., 9:10-12

▶ Provide an Alternative Level of Skill

III. Person of ordinary skill in the art

This Response addresses the Petition's deficiencies by assuming the Petition's proffered definition of the person of ordinary skill in the art.

POR, 6

▶ Argue that Mr. Schmandt Does Not Meet the Level of Skill

A. I'm saying that the petitioner put forth a person of ordinary skill in the art definition. It was reasonable. Somebody with experience in speech recognition. I believe somebody with those particular backgrounds could implement the patents at issue, and so those are the ones that I used.

Anderson Depo.Tr., 12:1-6