

Department Computer Science Case No. 575-18
Sponsor ARPA Contract/Grant 2494

Title Improvement to FM patent - interpolating SINE table
Inventor/s James A. Moorer Position Research Assistant

RECORDS

Details (place, date, reference)

(a) Conception ~~in 1974~~ at Stanford about May 27, 1975

(b) Construction/tests/useage - none -

(c) Publications/notes - none -

(d) Oral Disclosures - none -

ATTACHMENTS

(List attached material describing invention) 1) verbal description
2) block diagram
3) description dated 4/10/75

Disclosure submitted by James Anderson Moorer Date 4/11/75
(Inventor's signatures)

Read and understood by
(Signature of Witness)

Date

Remarks

Please type or print
Read other side first

STANFORD UNIVERSITY
INVENTION DISCLOSURE

LEAVE
BLANK

S.U. CASE NO.
S75-18
OTHER REFERENCES

1. TITLE OF INVENTION

System for Interpolating Sine Table

2. INVENTOR(S)

POSITION

DEPARTMENT

James A. Moorer

Research Associate

Computer Science

3. CONTRACT OR GRANT NO.

SPONSOR

PRINCIPAL INVESTIGATOR

DAHC15-73-C-0435

DOD/ARPA

J. McCarthy

4. EVENTS

*SEE INSTRUCTIONS
ON BACK

DATE

LOCATION

REFERENCES & COMMENTS [USE SEPARATE SHEET
IF NECESSARY]

A. Initial idea

B. First description of complete
invention, oral or written
(conception)*

3-26-75

Stanford

C. Invention development records, notes,
drawings (evidence of diligence)*

4-10-75

Stanford

Invention Disclosure

D. First successful demonstration, if any
(first actual reduction to practice)*

None

E. First publication containing full
description of invention
(establishment of publication bar)*

None

F. External oral disclosures

None

5. DESCRIPTION OF INVENTION (IDENTIFY, DATE AND LIST ATTACHMENTS DESCRIBING INVENTION)

Description of invention 4 pages

6. INVENTION SUBMITTED BY:

James A. Moorer
(INVENTOR'S SIGNATURE)

4-1-75
(DATE)

(CO-INVENTOR'S SIGNATURE)

(DATE)

(CO-INVENTOR'S SIGNATURE)

(DATE)

Invention disclosed to and understood by:

C. S. Liston
(SIGNATURE OF P.I. OR WITNESS)

2-17-76
(DATE)

(LEAVE BLANK)

See original for signature

XXXXXXXXXXXX
Encina 6-930

June 4, 1975

Nippon Gakki Seizo Kabushiki Kaisha
10-1, Nakazawa-cho, Hamanatsu-shi
Shizuoka-ken, Japan

Attention: Mr. Maki Kamiya
Chief, Patent Department

Dear Mr. Kamiya:

Pursuant to Paragraph 9.1 of the license agreement between the University and Nippon Gakki, we hereby submit a possible improvement invention by Mr. James A. Moorer entitled "Improvement to FM Patent - Interpolating SINE Table". This concept was discussed with Mr. Nagai of Nippon Gakki during his recent visit.

We hope your development work has been proceeding satisfactorily. If more information regarding the disclosure will be helpful, or if you have any questions, please let us know. Mr. Moorer may be contacted directly, should that be more convenient.

Very truly yours,

Niels J. Reimers
Manager, Technology Licensing

NJR:jp
Enclosure

cc: J. A. Moorer

SINCE 1887



YAMAHA
Nippon Gakki Co., Ltd.

Box 1, Hamamatsu, Japan
Telex: 4-2621, 312, 311
Telephone: Hamamatsu 51-1111

XCC Chowning

Moore
yfw

571-17

575-18

Mr. Niels J. Reimers
Technology Licensing
Stanford Univ.
Stanford, Calif. 94305
U.S.A.

Hamamatsu, June 19, 1975

TECHNOLOGY LICENSING

JUN 23 1975

STANFORD UNIVERSITY

Dear Mr. Reimers:

Though I must ask you to excuse me for such a long delay of my letter, I would now like to renew my sincere thanks for your every kindness shown to me during my visit to your university in last April.

In fact, "Stanford life" must be very happy and exciting if I could experience it.

Thank you also for your letter on Mr. Moorer's improvement. We will respond to it soon later.

Very truly yours,

Yohei Nagai
Yohei Nagai
Electro-Acoustic Lab.

Yohei NAGAI
Nippon Gakki Co. Ltd.
10-1 Nakazawa-cho
430 HAMAMATSU-SHI
JAPAN



YAMAHA

SINCE 1887

NIPPON GAKKI SEIZO KABUSHIKI KAISHA
(NIPPON GAKKI CO., LTD.)

10-1, Nakazawa-cho, Hamamatsu-shi, Shizuoka-ken 430, Japan.

Cable: NIPPONGAKKI HAMAMATSU, Telex: 4225-311, Telephone: 534-61-1111

DIGITAL FREQUENCY SYNTHESIZER

Inventor: Edward R. Jacobson, Albany, N.Y.

Assignee: Lockheed Electronics Corporation,
Encina 6-930
Stanford, CA 94303

U.S. Pat. No. 3,735,269

U.S. Pat. No. 3,735,269

Attention: Mr. Niels J. Reimers

Manager, Technology Licensing

Reference Cited

Re: Improvement to FM Patent

3,958,828 11/1960 Schreiber

3,100,851 5/1961 Ross et al

3,281,185 11/1965 Neumann

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Primary Examiner: Joseph S. Heyman

Attorney: Robert D. Egan, Stephen H. Edlund and Leonard Holtz

1975 August 23

ABSTRACT

A digital frequency synthesizer using modulo 10^n accumulator means for receiving signals corresponding to a predetermined frequency output and for successively generating signals corresponding to addresses in a storage means, each of the addresses corresponding to a storage location which stores digital values corresponding to at least the magnitude of a plurality of digital samples of the output signal from the synthesizer. A digital-to-analog converter converts the output of the storage means into a step-type waveform which is passed through a low pass filter to generate a smooth output waveform from the system. In order to reduce the size of the required storage device, high and quadrature symmetry may be taken advantage of.

40 Claims, 12 Drawing Figures

Our staffs concerned have evaluated this invention to see whether or not we would like this added to our Agreement and applied for a U.S. patent. And we have come to a conclusion that this improvement would not be patented for the reason as follows:

- (1) The concept of memorizing one quarter of the sine-table would belong to prior art as seen in the herein enclosed prior art documents A and B.
- (2) As Mr. Nagai told you at Stanford, Nippon Gakki had filed a patent application in Japan more than one year ago on an invention including this kind of interpolation idea, and in the U.S. claiming priority.

Therefore, we hereby notify you that Nippon Gakki does not wish a licence under this improvement invention to be added to our Agreement.

Very truly yours,
Nippon Gakki Seizo Kabushiki Kaisha

Maki KAMIYA
Chief, Patent Department

MK/tk
Enclosure

A: U.S. Patent NO. 3,735,269, May 22, 1973
B: IEEE Transactions on Audio and Electroacoustics, June 1970, PP. 201-203

STANFORD UNIVERSITY

AUG 25 1975

TECHNOLOGY LICENSING

February 17, 1976

STANFORD UNIVERSITY

FEB 19 1976

TECHNOLOGY LICENSING

Mr. Phillip J. Surra
Resident Representative
Office of Naval Research
Stanford University
Stanford, California 94305

Reference: Contract No. DAHC15-73-C-0435

Subject: Invention Disclosure S75-18 --
SYSTEM FOR INTERPOLATING SINE TABLE --
J. A. Moorer

Dear Mr. Surra:

Enclosed is a copy of a disclosure of the subject invention which was made under the referenced contract.

The University does not plan to take any further action in regard to this invention since there is some doubt as to patentability (see IEEE Transactions on Audio and Electroacoustics, June 1970, pp. 201-203).

Sincerely,

Clive S. Liston
Patent and Copyright Manager

cc: J. A. Moorer
N. J. Reimers ✓

CSL/gnf