



BEXIEW

INTELLECTUAL PROPERTY CREATORS

\* As Engineers

- Program, develop algorithms, design circuits

\* Almost everything we create will have this property

- Value added is intellectual
- Can be represented digitally in bits
- Can (increasingly) be copied/reproduced cheaply

\* Easy to have impact

- Our solutions can reach millions, billions
- Decreasing physical barriers to propagation of solutions

\* Challenge to protect and reward IP creators

MECHANISMS (TO SUPPORT)

\* Patents

- Cover inventions
- E.g., Flying Machine (US 821,393), ENIAC (US 3,120,606),

\* Copyrights
- Creative expression
- E.g., novel, song, movie

\* Article 1, Section 8, Clause 8:

- To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries

PATENT

Inventions

Non-obvious to one "ordinary skill in art"

Reduced to practice

Cannot patent

Abstract ideas

Laws of nature

US: First to file

(prior to 2013 was first to invent)

Exclusive rights 20 years from filing

1

PATENTS (CONTINUED)

**PATENT** 

Identification of problem is part of invention

× Claims

Define the invention

Technical coverage

Requires disclosure

If really believe no one else will figure it out...or can copy it, may be better to keep as a trade secret

License to litigate

Recover damages is through litigation

Establish violation

Validity of many patents overturned in litigation

PATENT PROCESS

US have one year from first-public disclosure to file

Many places – public disclosure prevent patent https://www.uspto.gov/web/offices/pac/mpep/s2153.html

May file provisional patent to get filing date

File patent with claims

Reviewed by examiner

Examiner reports on what may be allowable

As-is

With tighter qualifications

Not-at-all

On a per-claim basis

Typically requires several iterations

Often year(s) before patent issues

Filing costs thousands of dollars

With lawyer/legal fees tens to hundreds of thousands

United States Patent (10) Patent No.: US 10,725,778 B2 (45) Date of Patent: Jul. 28, 2020 References Cited
U.S. PATENT DOCUMENTS PROCESSING METADATA, POLICIES, AND (56) COMPOSITE TAGS (72) Investors: Andre' DeHon, Cambridge, Ny, (US)
(73) Assignee: The Charles Stark, Deraper,
(73) Assignee: The Charles Stark, Deraper,
Laboratory, Inc., Cambridge, MA
(US); The Trustees of the University
of Pennyslyania Penn Center for
Innovation, Philadelphia, PA, (US) 2519608 A 4/2015 2010028316 A1 3/2010 OTHER PUBLICATION (21) Appl. No.: 16002,442
(22) Filtel: Jun. 7, 2018
(65) Prior Publication Data
US 2018/03/5/03/1.Al. Nov. 22, 2018
Related US. Application Data
(60) Continuation of application No. 15/03/5.41, filed on
Sep. 5, 2017, now Tex. No. (02/01/794, which is a
(Continuation) ABSTRACT (52) U.S. CL CPC ..... G06F 9/30101 (2013.01); G06F 9/30072 (2013.01); G06F 9/30098 (2013.01);

What is claimed is:

1. A method of processing instructions comprising: receiving, for metadata processing, a plurality of metadata tags associated with a current instruction, said metadata tags associated with a current instruction, said metadata processing being performed in a metadata processing domain isolated from a code execution domain including the current instruction, each of the plurality of metadata tags relating to a respective component policy of a composite policy.

processing the plurality of metadata tags in parallel by respective met cache miss handlers comprising a plurality of hardware rule handlers, wherein processing. rality of hardware rule handlers, wherein processing for each metadata tag of the plurality of metadata tags for each metadata tag of the plurality of metadata tags, comprises:
determining, by a respective rule cache miss handler, in the metadata processing domain and in accordance with the metadata tag and the current instruction, whether a rule exists in a rule cache for the current instruction, said rule cache including rules on metadata used by said metadata processing to define allowed instructions; and providing a respective output; generating a composite result tag by combining the respective outputs into a single metadata Lag for the composite policy including each respective policy; and simultaneously enforcing, by the plurality of hardware rule cache miss handlers, each of the policies for the current instruction, each of the policies for the respective hardware rule cache miss handler.

XILINX FPGA US 4,870,302 ABSTRACT [57] ABSTRACT
A configurable logic array comprises a plurality of configurable logic elements variably interconnected in response to control signals to perform a selected logic function. Each configurable logic element in the array is in itself capable of performing any one of a plurality of logic function depending upon the control information placed in the configurable logic element. Each configurable logic element can have its function varied even after it is installed in a system by changing the control information placed in that element. Structure is provided for storing control information allow each configurable logic element to be properly configured prior to the initiation of operation of the system of which the array is a part. Novel interconnection structures are provided to facilitate the configuring of each logic element.

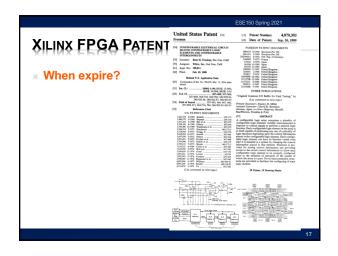
I claim:

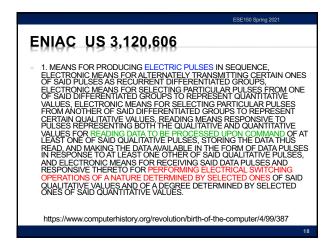
1. An interconnect structure for programmably inter-connecting lines within an integrated circuit compris-

connecting lines within an integrated circuit comprising:
at least three sets of interconnect line including a first
set, a second set, and a third set;
programmable means, not including said sets of interconnect lines, for connecting at least one of said
lines in said first set to at least one of said lines in
said second set, for connecting at least one of said
lines in said first set to at least one of said lines in
said third set, and for connecting at least one of said
lines in said second set to at least one of said lines in
said third set, and for connecting at least one of said
lines in said second set to at least one of said lines in

lines in said second set to at least one of said lines in said third at large of interconnect structures, each said interconnect structure as in claim 1, and each intercon-nect structure in said array having its own selected umber of interconnect lines and its own programmable means for connecting interconnect lines in its own first, second and third sets.

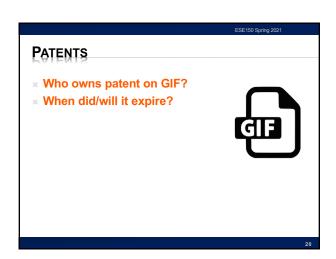
https://patents.google.com/patent/US4870302A/en?oq=us+4870302





WHAT'S PATENTABLE

Not law's of nature
Not abstract ideas
Cannot patent pi (π)
Software?
Originally not
With reference to machine, can often manage
Genetic sequences?...
...evolving...



ESE150 Spring 2021

COPYRIGHT

COPYRIGHT

Cover particular, original expression
Including software

Technically don't need to register
But should...
Must register before sue for infringement
\$35
No review, just registration

Life of author + 70 years

Work for hire: 95 years from publication

COPYRIGHT TERMS

\* Why are there so many Sherlock Holmes related movies and series these days?

+ Sherlock (BBC), Elementary, Irregulars
+ Enola Holmes
+ Sherlock Holmes movies (w/ Robert Downey Jr.)

\* When does Mickey Mouse copyright expire?

ESE1ED Soring 202

# TRADITIONALLY: TRANSFER COPYRIGHT ...

## \* Publish in ACM, IEEE journal

+ Transfer copyright to them, they license you back rights for derived work and post on person web site.

Copyright (c) 1996 by the Association for Computing Machinery, Inc. Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that new copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request Permissions from Publications Dept, ACM Inc., Fax +1 (212) 869-0481, or spermissions@acm.org>.

24

ESE150 Spring 2021

# RECENT: LICENSE TO ACM, IEEE

## Author retain copyright, license to publisher

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

FPGA '17, February 22 - 24, 2017, Monterey, CA, USA

© 2017 Copyright held by the owner/author(s). Publication rights licensed to ACM. ISBN 978-1-4503-4354-1/17/02... \$15.00

 ${\tt DOI: http://dx.doi.org/10.1145/3020078.3026124}$ 

25

South Park: Human CenitPad
https://southpark.cc.com/clips/382781/business-casual-g-men

ESE150 Spring 2021
LICENSING
27

LICENSE

\* Where have you seen licenses?

LICENSES

\* How get right to use

+ Something patented, copyrighted by someone else

\* Between companies

+ Get IP need to build a product

\* To consumers

+ Technically, most software is licensed, not sold

+ ...shrink-wrap/click-through licensing agreements...

\* Define terms of use

+ What you are paying for (one copy, many, resale...)

+ What uses (dis)allowed

RIBERT LISENSING/SOLES

PAST

\* Selling a product require huge infrastructure and up-front capital costs

- Manufacture (physical things)

- Marketing

- Distribution

- Sales

\* Demand large business to support infrastructure

\* Not easy for individual

TODAY (EMERGING)

\* Eliminate infrastructure needs with ubiquitous networking, IP products, service businesses

- Manufacture (physical things) → not issue for IP

\* ... or licensed manufacturing

- Marketing → still need to get the word out

\* ... can use web at low cost

- Distribution → not an issue for IP

\* ... leverage common carriers

- Sales

\* Handle online, eBusiness support

\* Becomes possible for individuals/small businesses to sell IP directly to consumers

DIRECT IP BUSINESSES TORAY

\* Examples?

DIRECT IP BUSINESSES TODAY

\* Kindle Direct Publishing
\* App Store / Google Play
\* AWS Marketplace
\* Café Press
\* Shapeways

SHARING

\*\*Sometimes we want to share

- Isn't it great doesn't cost us anything to give away digital products?

- Isn't it great can build on work of others without necessary cost?

- Cooperation on standards create opportunities for everyone, for an industry

CHALLENGE

\* Patents cost money

\* Business (people making money) will spend money to patent things

+ ...and typically incentivized to patent everything they can

\* Company (individual) could patent something and grant free license

\* How does individual, non-profit, etc.

+ Create something and protect right to share?

\* Variety of Open-Source/Public Domain licenses

CREATIVE COMMONS

\* Framework and set of licenses for clearly expressing intent

\* Issues

- Attribution
- Share-Alike
- (Non-)commercial
- (No)Derivatives

\* Apps to choose, logos to show, legal backing to define precisely

\* https://creativecommons.org/share-your-work/licensing-types-examples/

NON-RISCLOSURE AGREEMENT (NRA)

NDA

\* Tool for protecting IP

\* Legal agreement that you won't disclose someone information shared with you

+ Prevent loss of IP

\* Typical for collaborating companies

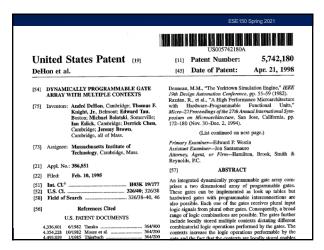
\* Typical for employers

\* In part to make sure sharing with you doesn't count as "disclosure" to preclude patents

\* Define scope of disclosure

WHO OWNS IP?





WORK SCENARIOS

\* Hired/paid by company to invent

+ Belongs to company

\* Invent on side on free time

+ ...may depend on employment agreement

+ ...whether or not subject matter overlaps with company

\* Consultant

+ By default yours, but consulting agreement may define

UNIVERSITY

➤ Based on grant funds and resources

- Typically goes to university and funding source
- Right of first refusal...won't always pursue

➤ Undergraduate
- Invent in class, senior-design → yours

➤ Graduate students paid RA from grant
- Typically funded by grant and go to University

➤ Undergraduate paid research (employee)
- Typically funded by grant and go to University

➤ Graduate students in class, using class resources
- Goes to University

■ We (engineers...particularly in computing space) are knowledge workers, producing IP
■ IP carries great value
■ That is less and less tied to physical objects
■ Need to equitably reward and encourage IP creation
■ Patents, Copyrights, Licenses ...
■ Attempts to provide framework for IP ownership, sharing, monetization
■ ...probably not the final answer, particularly as technology landscape continues to evolve.

7

# LEARN MORE \* EAS 507 – IP and Business Law for Engineers \* EAS 545 – Engineering Entrepreneurship + Has sections on IP

REMEMBER

\* Feedback

\* Lab 11 due today

\* Lab 12 on Monday

+ Load software

+ Some prelab code

\* Final lecture on Wednesday