National Aeronautics and Space Administration

Disclosure of Invention and New Technology (Including Software)

Form Approved O.M.B. NO. 2700-0052

DATE 2016-05-23

CONTRACTOR CASE NO.

NASA CASE NO. (OFFICIAL USE ONLY)
MFS-33409-1

This is an important legal document. Carefully complete and forward to the Patent Representative (NASA in-house innovation) or New Technology Representative (contractor/grantee innovation) at NASA. Use of this report form by contractor/grantee is optional; however, an alternative format must at a minimum contain the information required herein. NASA in-house disclosures should be read, understood and signed by a technically competent witness in the witness signature block at the end of this form. In completing each section, use whatever detail deemed appropriate fora "full and complete disclosure." Contractors/Grantees please refer to the New Technology or Patent Rights – Retention by the Contractor clauses. When necessary, attach additional documentation to provide a full, detailed description.

1. DESCRIPTIVE TITLE
pyCMR

2. INNOVATOR(S) *(For each innovator provide: Name, Title, Work Address, Work Phone Number, and Work E-mail Address. If multiple innovators, number each to match Box 5.)*

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3. INNOVATOR'S EMPLOYER WHEN INNOVATION WAS MADE *(For each innovator provide: Name, Division and Address of Employer, Organizational Code/Mail Code, and Contract/Grant Number if applicable. If multiple innovators, number each to match Box 5.)*
The University of Alabama in Huntsville, , 301 Sparkman Drive, Huntsville, AL , US, , NNM11AA01A
Marshall Space Flight Center, , MSFC, Huntsville, AL , US, ZP11,
Carnegie Mellon University - Silocon Valley, , 23 South Akron Road, Mountain View, CA 94035, US, , NNX16AE15G
Carnegie Mellon University - Silocon Valley, , 23 South Akron Road, Mountain View, CA 94035, US, , NNX16AE15G

4. PLACE OF PERFORMANCE *(Address(es) where innovation made)*
301 Sparkman Drive, Huntsville, AL , US
MSFC, Huntsville, AL , US
23 South Akron Road, Mountain View, CA 94035, US
23 South Akron Road, Mountain View, CA 94035, US

5. EMPLOYER STATUS *(choose one for each innovator)*

___ Innovator #1 ___ Innovator #2
___ Innovator #3 ___ Innovator #4

GE = Government
CU = College or University
NP = Non-Profit Organization
SB = Small Business Firm
LE = Large Entity

6. ORIGIN *(Check all that apply and provide all applicable numbers. If multiple Contracts/Grants, etc., list Contract/Grant Numbers in Box 3 with applicable employer information.)*

[ ] NASA In-house Org. Mail Code
[X] Grant/Cooperative Agreement No.
[ ] Prime Contract No.
Task No. Report No.
[ ] Subcontractor: Subcontract Tier
[ ] Joint Effort (contract, subcontractor and/or grantee contributions(s), and NASA in-house contribution)
[ ] Multiple Effort (multiple contractor, subcontractor and/or grantee contributions, no NASA in-house contribution)
[ ] Other (e.g., Space Act Agreement, MOA) No.

WBS: 547714.04.13.01.41
WBS: 430728.02.09.05.01
WBS: 929099.03.03.01.39

7. NASA CONTRACTORING OFFICER'S TECHNICAL REPRESENTATIVE (COTR)
Rahul Ramachandran

8. CONTRACTOR/GRANTEE NEW TECHNOLOGY REPRESENTATIVE (POC)
Manil Maskey / manil.maskey@uah.edu

9. BRIEF ABSTRACT *(A general description of the innovation which describes its capabilities, but does not reveal details that would enable duplication or imitation of the innovation.)*
Python client library (pyCMR) abstracts CMR search API (Application Program Interface) calls to a simple set of python functions that can be incorporated in client applications. The search responses are stored in the python dictionary for easy manipulation on the client side.

SECTION I – DESCRIPTION OF THE PROBLEM OR OBJECTIVE THAT MOTIVATED THE INNOVATION'S DEVELOPMENT (Enter as appropriate: A. – General description of problem/objective; B. – Key or unique problem characteristics; C. – Prior art, i.e., prior techniques, methods, materials, or devices performing function of the innovation, or previous means for performing function of software; and D. – Disadvantages or limitation of prior art.)

NASA ESDIS Common Metadata Repository (CMR) provides Application Program Interface to search for data collection and data files. However, most of the API interactions can be abstracted out for higher level programming languages, like python, into a library so that API interactions are simplified.

SECTION II – TECHNICALLY COMPLETE AND EASILY UNDERSTANDABLE DESCRIPTION OF INNOVATION DEVELOPED TO SOLVE THE PROBLEM OR MEET THE OBJECTIVE (Enter as appropriate; existing reports, if available, may form a part of the disclosure, and reference thereto can be made to complete this description: A. – Purpose and description of innovation/software; B. – Identification of component parts or steps, and explanation of mode of operation of innovation/software preferably referring to drawings, sketches, photographs, graphs, flow charts, and/or parts or ingredient lists illustrating the components; C. – Functional operation; D. – Alternate embodiments of the innovation/software; E. – Supportive theory; F. – Engineering specifications; G. – Peripheral equipment; and H. – Maintenance, reliability, safety factors.)

pyCMR is a python module that provides the following functionalities: search collection, search granule, and download granule. The module includes a set of test suites and a basic installation method.

SECTION III – UNIQUE OR NOVEL FEATURES OF THE INNOVATION AND THE RESULTS OR BENEFITS OF ITS APPLICATION (Enter as appropriate: A. – Novel or unique features; B. – Advantages of innovation/software; C. – Development or new conceptual problems; D. – Test data and source of error; E. – Analysis of capabilities; and F. – For software, any re-use or re-engineering of existing code, use of shareware, or use of code owned by a non-federal entity.)

SECTION IV – SPECULATION REGARDING POTENTIAL COMMERCIAL APPLICATIONS AND POINTS OF CONTACT (Including names of companies producing or using similar products.)

N/A

10. ADDITIONAL DOCUMENTATION *(Include copies or list below any pertinent documentation which aids in the understanding or application of the innovation (e.g., articles, contractor reports, engineering specs, assembly/manufacturing drawings, parts or ingredients list, operating manuals, test data, assembly/manufacturing procedures, etc.).)*

TITLE	PAGE	DATE

11. DEGREE OF TECHNOLOGY SIGNIFICANCE *(Which best expresses the degree of technological significance of this innovation?)*

[ ] Modification to Existing Technology [ ] Substantial Advancement in the Art [ ] Major Breakthrough

12. STATE OF DEVELOPMENT

[ ] Concept Only [ ] Design [ ] Prototype [ ] Modification [X] Production Model [ ] Used in Current Work

13. PATENT STATUS (Prior patent on/or related to this innovation)

14. INDICATE THE DATE OR THE APPROXIMATE TIME PERIOD WHICH THIS INNOVATION WAS DEVELOPED *(i.e., conceived, constructed, tested, etc.)*

This innovation was developed between the first of March 2016, approximately, through the beginning of May 2016.

15. PREVIOUS OR CONTEMPLATED PUBLICATION OR PUBLIC DISCLOSURE INCLUDING DATES *(Provide as applicable: A. - Type of publication or disclosure, e.g. report, conference or seminar, oral presentation; B. - Disclosure by NASA or Contractor/Grantee; and C. - Title, volume no., page no., and date of publication*

16. QUESTIONS FOR SOFTWARE ONLY

(a) Using non-NASA employees to beta-test the program? [X]YES [ ]NO If Yes, done under a beta-test agreement? [ ]YES [X]NO
(b) Modification of this program continued by civil servant and/or contractual agreement? [X]YES [ ]NO
(c) Copyrighted registered? [ ]YES [X]NO [ ]UNKNOWN If Yes, then by whom?
(d) Has the lastest version been distributed outside of NASA or contractor? [ ]YES [X]NO [ ]UNKNOWN
(e) Were prior version distributed outside of NASA or Contractor? [ ]YES [X]NO [ ]UNKNOWN If Yes, supply NASA or contractor contact
(f) Contains or based on code not owned by U.S. Government or its contractors? [ ]YES [X]NO [ ]UNKNOWN
If Yes, name of code and code's owner
Has a license for use been obtained? [ ]YES [X]NO [ ]UNKNOWN

17. DEVELOPMENT HISTORY

STAGE OF DEVELOPMENT	DATE (MM/YYYY)	LOCATION	IDENTIFY SUPPORTING WITNESSES NASA in-house only)
a. First disclosure to others	0/		
b. First sketch, drawing, logic chart or code	0/		
c. First written description	0/		
d. Completion of first model of full size device *(invention)* or beta version *(Software)*	0/		
e. First successful operational test *(invention)* or alpha version *(Software)*	0/		

f. Contribution of innovators *(if jointly developed, provide the contribution of each innovator)*

g. Indicate any past, present, or contemplated government use of the innovation

18. SIGNATURES OF INNOVATOR(S), WITNESS(ES), AND NASA APPROVAL

TYPED NAME AND SIGNATURE *(Innovator #1)*	DATE	TYPED NAME AND SIGNATURE *(Innovator #2)*	DATE
TYPED NAME AND SIGNATURE *(Innovator #3)*	DATE	TYPED NAME AND SIGNATURE *(Innovator #4)*	DATE
TYPED NAME AND SIGNATURE *(Innovator #5)*	DATE	TYPED NAME AND SIGNATURE *(Innovator #6)*	DATE

NASA APPROVED	TYPED NAME	SIGNATURE	DATE