


Date: 02Jan2015

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| <p>To: APEGA - Association of Professional Engineers and Geoscientists of Alberta 2200 Scotia Centre 700 2nd Street SW Calgary, AB T2P 2W1 Tel: 403-262-7714 http://www.apega.ca</p> | <p>From: William Neil Howell PO Box 299 Hussar, Alberta T0J1S0 www.BillHowell.ca Bill@BillHowell.ca 1-587-707-2027</p> |  |
|--|--|---|

Subject: Howell 150102 - APEGA Professional Development - 2013+2014 Report

This letter summarizes my Professional Development efforts in 2013 and 2014 as related to maintaining my APEGA status. This report shows that I am on-track to fulfill (perhaps surpass) my three-year requirement by 31Dec2015, and clearly that I put substantial UNPAID time and personal out-of-pocket money into professional activities. Everything in this report is volunteer work (I am currently semi-retired, but need to start a brand new career soon).

As this is my first such report since being re-instated in Alberta as a P.Eng. in 2013, I have perhaps gone overboard, but it has taken some time to properly set up for this reporting, and it will be much faster for future years.

[NOTE : This letter was not sent - there are simply 5 or six boxes to enter the summary numbers for each category. This document has been posted to : <http://www.billhowell.ca/Professional%20&%20Resume/150102%20Howell%20-%20APEGA%20Professional%20Development,%202014%20Report.pdf>]

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Howell - Continuing Professional Development, APEGA Requirements and Performance

Howell - Continuing Professional Development, APEGA Requirements and Performance

www.BillHowell.ca initial version 22Nov2013, update 02Jan2015

| Category | Hours | Maximum PDHs Per Year | PDHs | | Comments - Howell's actuals | |
|---|-----------------------------------|-----------------------|---------------|----------------|-----------------------------|---|
| | | | plan per year | 2013+2014 plan | | 2013+2014 actual |
| Professional Practice | 15 hours = 1 PDH | 50 | 0 | 0 | 0 | None - unless I get a professional engineering job |
| Formal Activity | 1 hour = 1 PDH 1 CEU = 10 PDHs | 30 | OK | OK | OK | Formal activities are often for academic credit and may include an evaluation process. Where there is no evaluation, credit may be claimed in this category for activities that are over half a day in length. |
| <ul style="list-style-type: none"> professional development programs, courses and seminars | | | 5 | 10 | | |
| <ul style="list-style-type: none"> courses offered by universities, technical institutes, colleges, suppliers, employers or technical societies | | | 8 | 16 | 16 | Hydrogeology 3-day course at APEGA AGM, 6 2-hr tutorials at IJCNN2013 & 2014 |
| <ul style="list-style-type: none"> courses offered in traditional classroom settings, by correspondence, by video or online | | | 0 | 0 | 0 | |
| Informal Activity | 1 hour = 1 PDH | 30 | OK | OK | OK | Informal activities are usually shorter in duration and do not involve any evaluation, but nevertheless expand your knowledge, skills and judgment. |
| <ul style="list-style-type: none"> self-directed study | | | 5 | 10 | 10 | >> 120 hours per year consistently!! This is required for peer review of journal and conference papers, plus fundamental theoretical physics, climate, astronomy, history |
| <ul style="list-style-type: none"> attendance at conferences and industry trade shows | | | 10 | 20 | 20 | easily >> 40 hours work and attendance every year at IJCNN 2013+2014, PLUS NPA/EU as well!!! |
| <ul style="list-style-type: none"> seminars, technical presentations, talks and workshops (if half a day or less) | | | 5 | 10 | | easily >> 20 hr/yr when I was working, APEGA and others now probably |
| <ul style="list-style-type: none"> attendance at meetings of technical, professional or managerial associations or societies | | | 5 | 10 | 10 | I vastly surpass this - INNS Board, IEEE-CIS (see my timesheet summary table) |
| <ul style="list-style-type: none"> structured discussion of technical or professional issues with one's peers | | | 5 | 10 | 10 | EASILY surpass! >> 30 hours/yr |
| Participation | 1 hour = 1 PDH | 20 | OK | OK | OK | Activities that promote peer interaction and provide exposure to new ideas and technologies both enhance the profession and serve the public interest. |
| <ul style="list-style-type: none"> appointment as a mentor to a Member-in-Training, less experienced professional member or technologist | | | 0 | 0 | 0 | |
| <ul style="list-style-type: none"> service on public bodies that draw on professional expertise (i.e. planning boards, development appeal boards, investigative commissions, review panels or community building committees) | | | 0 | 0 | 0 | |
| <ul style="list-style-type: none"> service on standing or ad-hoc committees of a technical or professional nature or managerial associations and societies | | | 10 | 20 | 20 | Elected to Board of Governors of International Neural Network Society (INNS) for 3 years, On Organizing Committee of IJCNN 2013+2015 (Publicity Co-Chair, lots of work!), WCCI 2014 review chair, INNS-BigData2015 Publicity Co-Chair |
| <ul style="list-style-type: none"> activities that contribute to the community which require professional and ethical behaviour, but not necessarily the application of technical knowledge - including active service for charitable, community, religious or service organizations, coaching league sports teams, or elected public service on municipal, provincial or federal levels or school boards. | | 10 | 0 | 0 | 7 | Red Deer College student mixer, Schulich Engineering 3&4th year student dinners in 2013&2014 |
| Presentations - preparation & delivery | 1 hr = 1 PDH | 20 | OK | OK | OK | Eligible presentations are those of a technical or professional nature that are discretionary, that is, outside your normal job functions. |
| <ul style="list-style-type: none"> at a conference, meeting, course, workshop or seminar | | | 20 | 40 | 0 | In 2015 I hope to present at one of : NPA, EU, FOS or APEGA, but travel money will be a problem (and time!!) |
| <ul style="list-style-type: none"> either within a company or at an event sponsored by a technical or professional organization. | | | 0 | 0 | 0 | |

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Howell - Continuing Professional Development, APEGA Requirements and Performance

www.BillHowell.ca initial version 22Nov2013, update 02Jan2015

| Category | Hours | Maximum PDHs Per Year | PDHs | | Comments - Howell's actuals | |
|--|----------------------|-----------------------|---------------|-----------------------------------|-----------------------------|---|
| | | | plan per year | 2013+2014 plan / 2013+2014 actual | | |
| Contributions to Knowledge | | 30 | OK | OK | OK | Activities which expand or develop the technical knowledge base in the three professions are recognized. |
| • develop published codes and standards | 1 hour = 1 PDH | | 0 | 0 | 0 | |
| • patents | 1 patent = 15 PDHs | | 0 | 0 | 0 | |
| • publish paper in peer-reviewed technical journal | 1 paper = 15PDHs | | 0 | 0 | 0 | next year! |
| • thesis: successfully defended and approved | 30 PDHs/yr | | 0 | 0 | 0 | nyet |
| • publish book = 60 PDHs, claimable over 2 | 60 PDHs | | 0 | 0 | 0 | In 2015 fill publish DVD on history!! |
| • publish article in non-reviewed journal or internal company report | 1 article = 10 PDHs | 10 | 10 | 20 | 20 | 1. 12Dec2014 Don Scott's Birkeland current magnetic structure, I publicly posted mathematical/physics verification and my recommendations 2. 13Oct2013 Robots, Signal Processing and Control Theory - Random, stray thoughts 3. 11Oct2013 Functional magnetic resonance imaging (fMRI) - Random, stray thoughts 4. mostly in winter/spring 2014 - 2.5 months work on initial film development on history Future in 2015 - I will verify, analyse and recommend regarding : a) Ed Dowdye's "Extrinction Shift Principle" b) Charles Lucas' "Universal Force" |
| • review articles for publication | 1 hr review = 1 PDH | 10 | 10 | 20 | 20 | I VASTLY overachieve here!! (see tables) Also my depth & quality of review greatly exceeds that of most other scientists! |
| • edit papers for publication | 1 hr editing = 1 PDH | | 10 | 20 | 20 | I provide extensive editing for foreign-language authors when I do peer reviews. In 2015 perhaps 1 book chapter to review? |
| Total | | | 103 | 206 | 153 | |
| Requirement (80 per year) : | | | 80 | 160 | 160 | |

from : APEGA "Continuing Professional Development Program" June 2006, p4

4.1 Numerical & Diversity Requirements

Years of plan/actual : 2

A credible program must define minimum levels of effort. The unit of measure for this effort is a Professional Development Hour (PDH). There is flexibility in terms of the number of professional development categories, the period over which the minimums must be attained and the carry-forward provisions. The requirements are as follows:

- You must maintain a total of at least 240 PDHs over three years.
- You must include activities in at least three of the six categories.
- You can not claim more than the maximum PDHs allowed annually in each category.

Note that several numbers are missing or need substantiation :

- professional development programs, courses and seminars
- courses offered by universities, technical institutes, colleges, suppliers, employers or technical societies

However, that is not critical at this time, as I am comfortable with my PD activities and progress. Next year I can add the detail.

Key professional responsibilities

As stated in the cover letter, I am currently semi-retired, but plan on starting a new career within two years. Even so, I have many volunteer responsibilities of a “professional” nature :

Key professional responsibilities, memberships

www.BillHowell.ca, initial draft 02Jan2015

| | | Dates | |
|--|---|-----------|-----------|
| | | Start | End |
| International Neural Network Society (INNS, ~500 members) | | | |
| | Elected to Board of Governors | 01Nov2013 | 31Oct2016 |
| | Appointed as Secretary | 01Dec2013 | 01Mar2015 |
| | Member | ~1988 | continual |
| IEEE-Computational Intelligence Society (IEEE-CIS) | | | |
| | Member | ~2003 | continual |
| International Joint Conference on Neural Networks (IJCNN) www.ijcnn.org | | | |
| | This conference is a collaboration between the INNS and IEEE-CIS, and is the most important such conference in the world, as well as being among the first. Most of the early scientific pioneers have participated, and apart from deaths, still do. I have helped on odd-year Organizing Committees (run by the INNS) for all but two conferences since 2003. | | |
| | 2013 Dallas Texas - Publicity Chair, review committee, reviewer, attendance | 03Nov2011 | 10Aug2013 |
| | 2014 Beijing China - review committee, reviewer, attendance | 20Jan2014 | 12Jul2014 |
| | 2015 Killarney Ireland - Publicity Co-Chair, in 2015 will review committee, reviewer, attendance | 01May2014 | 18Jul2015 |
| INNS Big Data Inaugural Conference http://www.innsbigdata.org/ | | | |
| | This is the first such conference organized by the INNS. I was personally requested by the [founder, General Co-Chair] to lead a team on Publicity. | | |
| | 2015 San Francisco - Publicity Co-Chair, review committee, reviewer, but NOT attendance | 30Jul2014 | 15Apr2015 |
| International Conference on Intelligent Control and Information Processing (ICICIP) http://icicip.dlut.edu.cn/ | | | |
| | 2014 Dalian China - reviewer, but NOT review committee, attendance | 05May2014 | 09Jun2014 |
| IEEE Symposium Series on Computational Intelligence (SSCI) http://www.ieee-ssci.org | | | |
| | 2013 Singapore - reviewer, but NOT review committee, attendance | 18Dec2012 | 01Jan2013 |
| | 2014 Orlando, Florida - reviewer, but NOT review committee, attendance | 04Jun2014 | 20Aug2014 |
| IEEE International Symposium on INnovations in Intelligent SysTems and Applications (INISTA) | | | |
| | 2013 - reviewer, but NOT review committee, attendance | 14Apr2013 | 16Apr2013 |

This list does NOT include my membership in non-professional scientific organisations, especially in the areas of fundamental theoretical physics, astronomy, climate science/non-science, and history (mostly on my own).

Review committee - means that I was responsible for selecting reviewers (usually for 5 papers) and following up on their work, finding replacements if necessary.

Please note that I am definitely NOT a “passive” committee member like so many others that take the title and do the minimum effort (or no effort). I put a LOT of time into my engagements!

endpage

List of Courses, seminars, conference attendance

I didn't get around to creating a formal list, although several are mentioned in the table "Howell - Continuing Professional Development, APEGA Requirements and Performance". Next year I'll be more specific.

endpage

2013 + 2014 summary of my time related to Professional Development

| Bill Howell, APEGA reporting - Summary of timeLog for period | | | | | |
|---|--------------|-----------|-----|---------------------|-------------------|
| Date_start : | 01/Jan/13 | | | | |
| Date_end : | 31/Dec/14 | | | | |
| Warning : Activity times overlap. The total is the sum of green-shaded areas and is correct. | | | | | |
| Project Name | Sub-project | Sub - sub | Car | Activity time (hrs) | % of activity hrs |
| Neural Nets | | | | 1,054 | 93.0% |
| Neural Nets | INNS | | | 55 | 4.8% |
| Neural Nets | IJCNN2013 | | | 156 | 13.7% |
| Neural Nets | IJCNN2014 | | | 127 | 11.2% |
| Neural Nets | IJCNN2015 | | | 175 | 15.5% |
| Neural Nets | BigData2015 | | | 74 | 6.5% |
| Neural Nets | ICICIP2014 | | | 41 | 3.6% |
| Neural Nets | SSCI2014 | | | 12 | 1.0% |
| Neural Nets | INISTA | | | 12 | 1.0% |
| Neural Nets | People | | | 16 | 1.4% |
| Neural Nets | | reviews | | 499 | 44.0% |
| Neural Nets | | Publicity | | 208 | 18.3% |
| Neural Nets | | attend | | 148 | 13.1% |
| MyClubs | APEGA | | | 67 | 5.9% |
| MyClubs | APEGA | ProfDev | | 37 | 3.2% |
| MyClubs | APEGA | AGM | | 16 | 1.4% |
| MyClubs | IEEE S Alta | | | 6 | 0.5% |
| MyClubs | IEEE-Calgary | | | 1 | 0.1% |
| MyClubs | IEEE S Alta | | | 6 | 0.5% |
| Total hours for activities during the specified period | | | | 1,134 | 100.0% |
| Total overall hours of period (24h/d), and Total activity hours as % of overall | | | | 17,496 | 6.5% |

I must emphasize a few points related to my scientific peer reviews for journals and conferences.

- To begin with, these account for >500 hours of effort in the two years reported!
- My reviews are in EXTREMELY advanced areas of science, and much of it over the last two years required verification of mathematical theorems and proofs. Some of it touches on what I consider to be THE most advanced control theory there is (not at the system level, but the fundamental conceptual and theoretical levels). See “Example - Listing of Neural Networks journal peer reviews” below.
- The way I do my peer reviews greatly surpasses the effort and depth of the vast majority of other peer reviewers, even for advanced scientific journals. I see this regularly as a review chair, and with feedback from all reviews for the NN journal. I am NOT an expert in most areas, so I cannot claim to come up with the RARE insightful comment that a very few experts occasionally do, but I do catch many conceptual and math theorem errors. As two recent examples, see my reviews posted at :
 - <http://www.billhowell.ca/Neural%20nets/Howell%20140116%20example%20peer%20review%20-%20Anti-Windup%20for%20time-varying%20delayed%20CNNs%20subject%20to%20Input%20Saturation.pdf>
 - <http://www.billhowell.ca/Neural%20nets/Howell%20141014%20example%20peer%20review%20-%20Fully%20probabilistic%20control.pdf>

Sample of TimeLog details as an example of verifiable backup for my numbers.

(This is a very small fraction of what was used to make my report.)

| Date | Day | Start | End | Net | period_sel date_chgs | Project Na | Sub-proje | Car | Todo | Done |
|-----------|-----|-------|-----|-----|-------------------------|------------|-----------|-------------|------------------------------|-------------------------|
| 20-Nov-13 | Wed | 19:01 | | 0.2 | | MyClubs | APEGA | | Pay 304\$ + 100\$ donation | can't pay online? |
| 20-Nov-13 | Wed | 19:15 | | 1.8 | | MyClubs | APEGA | | create "Continuing | DONE - easily meet |
| 17-Jan-14 | Fri | 13:50 | | 0.2 | | MyClubs | APEGA | | Register - 23Jan2013 | |
| 19-Jan-14 | Mon | 23:49 | | 0.2 | | MyClubs | APEGA | AGM | register AGM 30Jan2013 | |
| 23-Jan-14 | Thu | 11:00 | | 0.6 | | MyClubs | APEGA | AGM | preps to go to APEGA | |
| 23-Jan-14 | Thu | 17:30 | | 2.8 | | MyClubs | APEGA | ProfDev | walk in big circle to | |
| 23-Jan-14 | Thu | 23:47 | | 0.2 | | MyClubs | APEGA | ProfDev | unload Nissan | |
| 24-Jan-14 | Sat | 15:40 | | 0.3 | | MyClubs | APEGA | students | Emprep Susan Armitage, I | |
| 24-Feb-14 | Tue | 14:12 | | 0.1 | | MyClubs | APEGA | students | Reminder Plan to Attend - | confirmed tomorrow |
| 26-Feb-14 | Wed | 11:35 | | 0.7 | 6 | MyClubs | APEGA | students | Preps - goto Red Deer | print map, vidcam |
| 26-Feb-14 | Wed | 13:09 | | 0.6 | | MyClubs | APEGA | students | Preps - goto Red Deer | bath |
| 26-Feb-14 | Wed | 16:42 | | 4.9 | 6 | MyClubs | APEGA | students | goto Red Deer 12:00 - | walked around, salad, |
| 26-Feb-14 | Wed | 00:04 | | 0.2 | | MyClubs | APEGA | students | unload GMC | |
| 04-Mar-14 | Tue | 16:50 | | 1.6 | | MyClubs | APEGA | | Prof Development | goto AGM, get job |
| 25-Mar-14 | Tue | 18:20 | | 2.2 | 1 | MyClubs | APEGA | | ~18:50 election town hall | purchase cheese @ |
| 27-Mar-14 | Thu | 13:40 | | 0.5 | 9 | MyClubs | APEGA | ProfDev | goto Calgary - Critical | NYET - No room left! |
| 31-Mar-14 | Mon | 11:34 | | 0.8 | 14 | MyClubs | APEGA | | VOOTE today!! | APEGA 2014 |
| 31-Mar-14 | Mon | 13:35 | | 0.7 | | MyClubs | APEGA | AGM | registration for Annual | Done! - 800\$!!! (700 |
| 03-Apr-14 | Thu | 14:25 | | 0.2 | | MyClubs | APEGA | ProfDev | 16Apr2014 luncheon | |
| 07-Apr-14 | Mon | 10:48 | | 0.5 | 15 | MyClubs | APEGA | AGM | book hotel, Note 175 | Days Inn |
| 16-Apr-14 | Wed | 08:49 | | 0.7 | | MyClubs | APEGA | ProfDev | preps luncheon - Wellbore | iron shirt/ pants/ tie, |
| 16-Apr-14 | Wed | 10:51 | | 3.2 | 2 | MyClubs | APEGA | ProfDev | luncheon - Wellbore | |
| 16-Apr-14 | Wed | 17:28 | | 0.4 | | MyClubs | APEGA | ProfDev | unload Nissan | |
| 23-Apr-14 | Wed | 09:44 | | 0.8 | | MyClubs | APEGA | ProfDev | clothes - iron, laundromat | can't find car keys!! |
| 23-Apr-14 | Wed | 10:30 | | 0.6 | | MyClubs | APEGA | ProfDev | APEGA notes and program | |
| 23-Apr-14 | Wed | 11:04 | | 0.2 | | MyClubs | APEGA | ProfDev | preps - trip to Edmonton | print ToDos, projects |
| 23-Apr-14 | Wed | 12:31 | | 0.6 | | MyClubs | APEGA | ProfDev | load car, park GMC in | |
| 23-Apr-14 | Wed | 13:08 | | 0.1 | | MyClubs | APEGA | ProfDev | travel checks | |
| 24-Apr-14 | Thu | 06:24 | | 5.6 | | MyClubs | APEGA | ProfDev | PD, coffee, register, meet | Wellbore Integrity - |
| 24-Apr-14 | Thu | 13:00 | | 4.0 | | MyClubs | APEGA | ProfDev | PD course - Wellbore | with coffee break |
| 24-Apr-14 | Thu | 17:02 | | 0.5 | | MyClubs | APEGA | ProfDev | unload Nissan - Days Inn | setup computer |
| 25-Apr-14 | Fri | 07:40 | | 0.3 | | MyClubs | APEGA | ProfDev | walk to ShawCC | |
| 25-Apr-14 | Fri | 08:00 | | 0.5 | | MyClubs | APEGA | ProfDev | coffee, talk, etc | |
| 25-Apr-14 | Fri | 08:30 | | 3.5 | | MyClubs | APEGA | ProfDev | PD course - Wellbore | with coffee break |
| 25-Apr-14 | Fri | 13:00 | | 4.0 | | MyClubs | APEGA | ProfDev | PD course - Wellbore | with coffee break |
| 25-Apr-14 | Fri | 17:00 | | 0.3 | | MyClubs | APEGA | ProfDev | walk to Days Inn | |
| 25-Apr-14 | Fri | 17:55 | | 0.3 | | MyClubs | APEGA | AGM | walk to Westin Edmonton | |
| 25-Apr-14 | Fri | 18:15 | | 5.4 | | MyClubs | APEGA | AGM | German beer night, great | |
| 25-Apr-14 | Fri | 23:40 | | 0.3 | | MyClubs | APEGA | AGM | walk to Days Inn | |
| 26-Apr-14 | Sat | 06:55 | | 0.6 | | MyClubs | APEGA | AGM | pack bags into Nissan | |
| 26-Apr-14 | Sat | 07:30 | | 0.3 | | MyClubs | APEGA | AGM | walk to Westin Edmonton | |
| 26-Apr-14 | Sat | 07:50 | | 1.2 | | MyClubs | APEGA | AGM | breakfast - came with | |
| 26-Apr-14 | Sat | 09:00 | | 3.5 | | MyClubs | APEGA | AGM | actual meeting | coffee break with |
| 26-Apr-14 | Sat | 12:30 | | 1.7 | | MyClubs | APEGA | AGM | luncheon - Rex Murphy | |
| 26-Apr-14 | Sat | 14:10 | | 0.3 | | MyClubs | APEGA | AGM | walk to Days Inn | |
| 26-Apr-14 | Sat | 14:40 | | 0.4 | | MyClubs | APEGA | AGM | preps - drive home | |
| 26-Apr-14 | Sat | 21:28 | | 0.2 | | MyClubs | APEGA | AGM | unload Nissan | incomplete |
| 27-Apr-14 | Sun | 07:29 | | 0.4 | | MyClubs | APEGA | ProfDev | unload Nissan | |
| 28-May-14 | Wed | 18:32 | | 0.2 | | MyClubs | APEGA | ProfDev | Mom&BUY 3 APEGA luncheon | no can do - sold out! |
| 04-Jun-14 | Wed | 11:50 | | 0.6 | | MyClubs | APEGA | ProfDev | Mom&preps - Gerry Maier | |
| 04-Jun-14 | Wed | 16:00 | | 5.8 | | MyClubs | APEGA | ProfDev | Mom&Gerry Maier presentation | |
| 04-Jun-14 | Wed | 23:16 | | 0.1 | | MyClubs | APEGA | ProfDev | unload Nissan | partly |
| 05-Jun-14 | Thu | 06:30 | | 0.2 | | MyClubs | APEGA | ProfDev | unload Nissan | laundry, Copenhagen |
| 10-Nov-14 | Mon | 11:18 | | 0.5 | 4 | MyClubs | APEGA | ProfDev | reservations for PD course | what a mess |
| 26-Nov-14 | Wed | 16:37 | | 0.5 | | MyClubs | APEGA | survey | online filled in | DONE |
| 11-Dec-14 | Thu | 08:35 | | | 1 | MyClubs | APEGA | ProfDev | preps - 11:15 APEGA | can't find Laverdure's |
| 11-Dec-14 | Thu | | | | 1 | MyClubs | APEGA | ProfDev | 11:15 APEGA lunch, | |
| 01-Jan-15 | Thu | 08:31 | | 1.1 | 8 | MyClubs | APEGA | self-develo | write up years activities | list of NN reviews |
| 01-Jan-15 | Thu | 09:45 | | 2.3 | | MyClubs | APEGA | self-develo | write up years activities | list of NN reviews |

NOTE : The hours are taken from a log book accurate to within 5 minutes "normally", but with many omissions. Estimates are therefore a lower bound!!

Example - Listing of Neural Networks journal peer reviews

| Howell's effort | | since 2007 | | 2013-2014 | | Neural Networks journal - Reviews by William Neil Howell, M.A.Sc. www.BillHowell.ca | | | | | | | | | | | | | |
|-----------------|-----------|----------------------|----------------------|----------------------|----------------------|--|--------------|--|-------------|--------------------|-------------------|---------|---------|---------|-----------|------------|---------------|--|--|
| # of reviews | time (hr) | length (ASCII bytes) | length (ASCII bytes) | length (ASCII bytes) | length (ASCII bytes) | Manuscript Number | Article Type | Article Title | Status Date | Current Status | Final Disposition | Invited | Agreed | Done | Submitted | Days Taken | Editor's Name | | |
| 1 | | | | | | 2 NEUNET-D-1 4-00410 | Article | Analysis of connectivity in NeuCube spiking neural network models trained on EEG data for the understanding and prediction of functional changes in the brain: A case study on opiate dependence treatment. | 03Dec14 | Revise | | 24Oct14 | 24Oct14 | 21Nov14 | 16Nov14 | 23 | | | |
| | | | | | | | | The paper presents a new methodology for the analysis of functional changes in brain activity across different conditions and different groups of subjects. This analysis is based on the recently proposed NeuCube spiking neural network (SNN) framework (18) and more specifically on the analysis of the connectivity of a NeuCube model trained with electroencephalography (EEG) data. The case study data used to illustrate this method is EEG data collected from three groups - subjects with opiate addiction, some taking methadone maintenance treatment, and a non-drug users/healthy control group. The proposed method classifies more accurately the EEG data from different groups of subjects than traditional statistical and artificial intelligence (AI) methods that can be used to predict response to treatment and the appropriate dosage of drug. But more importantly, the method can be used to compare functional brain activities of different subjects and the changes of these activities as a result of treatment, which is a step towards a better understanding of both the EEG data and the brain processes that generated it. | | | | | | | | | | | |
| 1 | | | | | | 2 NEUNET-D-1 4-00379 | Article | Multistability of Neural Networks with Discontinuous Non-monotonic Piecewise Linear Activation Functions and Time-Varying Delays | 24Dec14 | Under Review | | 26Sep14 | 26Sep14 | 24Oct14 | 21Oct14 | 25 | | | |
| | | | | | | | | This paper is concerned with the problem of coexistence and dynamical behaviors of multiple equilibrium points for neural networks with discontinuous non-monotonic piecewise linear activation functions and time-varying delays. The fixed point theorem and other analytical tools are used to develop certain sufficient conditions that ensure that the n-dimensional discontinuous neural networks with time-varying delays can have at least 5n equilibrium points, 3n of which are locally stable and the others are unstable. The importance of the derived results is that it reveals that the discontinuous neural networks can have greater storage capacity than the continuous ones. Moreover, different from the existing results on multistability of neural networks with discontinuous activation functions, the 3n locally stable equilibrium points obtained in this paper are located in not only saturated regions, but also unsaturated regions, due to the non-monotonic structure of discontinuous activation functions. A numerical simulation study is conducted to illustrate and support the derived theoretical results. | | | | | | | | | | | |
| 1 | | | | | | 6 NEUNET-D-1 4-00166R1 | Article | Fully Probabilistic Control for Stochastic Nonlinear Control Systems with Input Dependent Noise | 10Dec14 | Completed - Accept | Accept | 18Aug14 | 19Aug14 | 16Sep14 | 12Sep14 | 24 | | | |
| | | | | | | | | Robust controllers for nonlinear stochastic systems with functional uncertainties can be consistently designed using probabilistic control methods. In this paper a generalised probabilistic controller design for the minimisation of the Kullback-Leibler divergence between the actual joint probability density function (pdf) of the closed loop system, and an ideal joint pdf is presented emphasising how the uncertainty can be systematically incorporated in the absence of reliable systems models. To achieve this objective all probabilistic models of the system are estimated from process data using mixture density networks (MDNs) where all the parameters of the estimated pdfs are taken to be state and control input dependent. Based on this dependency of density parameters on the input values, explicit formulations to the construction of optimal generalised probabilistic controllers are obtained through the techniques of dynamic programming and adaptive critic methods. Using the proposed generalised probabilistic controller, the conditional joint pdfs can be made to follow the ideal ones. A simulation example is used to demonstrate the implementation of the algorithm and encouraging results are obtained. | | | | | | | | | | | |
| 1 | | | | | | 1 NEUNET-D-1 4-00130 | Article | Synchronization of memristor-based recurrent neural networks with two delay components based on second-order reciprocally convex approach | 02Jun14 | Completed - Accept | Accept | 21Mar14 | 21Mar14 | 18Apr14 | 18Apr14 | 28 | | | |

| Howell's effort | | Manuscript Number | Article Title | Status Date | Current Status | Final Disposition | Date Review | | | | | | | | |
|-----------------|-----------|-------------------|-----------------------|--|--|--------------------|---------------------------|----------------------------|-------------|---------|--------|------|-----------|------------|---------------|
| # of reviews | time (hr) | | | | | | math length (ASCII bytes) | Total length (ASCII bytes) | MyReviewer# | Invited | Agreed | Done | Submitted | Days Taken | Editor's Name |
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| 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| | | 2 | NEUNET-D-1 4-00083 | Logarithmic Learning for Generalized Classifier Neural Network | 12Aug14 | Completed - Accept | 07Feb14 | 09Feb14 | 09Mar14 | 04Mar14 | 23 | | | | |
| | | 1 | | Generalized classifier neural network is introduced as an efficient classifier among the others. Unless initial smoothing parameter value is close to optimal one, generalized classifier neural network suffers from convergence problem and requires very long time to converge. To solve this problem in this work, a logarithmic learning method is proposed. Proposed method uses logarithmic cost function instead of squared error. Minimization of this function reduces the number of iterations used for reaching the minima. Proposed method is tested on 15 different data sets and performance of log-arithmic learning generalized classifier neural network is compared with that of standard one. Thanks to operation range of radial basis function included by generalized classifier neural network, proposed logarithmic approach and its derivative has continuous values. This makes it possible to adopt the advantage of logarithmic fast convergence by the proposed learning method. Due to fast convergence ability of logarithmic cost function, training time is decreased approximately in the range of 0% to 99.2%. In addition to decrease in training time, classification performance is also improved approximately in the range of 0% to 60%. According to the test results, while proposed method solves time requirement problem of generalized classifier neural network, it also improves the accuracy. Proposed method can be considered as an efficient way for solving time requirement problem of generalized classifier neural network. | | | | | | | | | | | |
| | | 1 | 1 | NEUNET-D-1 3-00345 | AN ENHANCED APPROACH FOR IRIS RECOGNITION USING FUSION OF FWT WITH GABOR WAVELET TRANSFORM AND DAUGMAN ENCODING | 25Feb14 | Completed - Reject | 06Dec13 | 17Jan14 | 17Jan14 | 42 | | | | |
| | | | | | This paper discusses iris recognition which is accepted as one of the best biometric methods for identifying an individual. A comparative analysis is done for eight algorithms namely DCWT, FWT, SWT, CWT, DB, Complex dual tree, Haar wavelet and Wavelet packet for extracting the features from iris images. Extracting the iris features of the image is still intractable as the existing algorithms fail to deliver the maximum accuracy. Among the eight algorithms, Fast Wavelet Transform (FWT) delivers 72.9 percent accuracy. This paper suggests a better way to enhance the accuracy using the Fast Wavelet Transform with the use of Gabor Wavelet transform and Daugman algorithm. Gabor Wavelet Transform has multi-resolution and multi-orientation properties, which makes it popular for feature extraction. Daugman algorithm has computational simplicity and speed, which suppresses the proposed method. Learning Vector Quantization (LVQ) neural network is used in the authentication unit. Results from confusion matrix and ROC shows that the proposed method produces cent percent accuracy. This implies that the effectiveness in authenticating the right person will be higher. | | | | | | | | | | |
| | | 3 | NEUNET-D-1 3-00401 | Anti-Windup for time-varying delayed cellular neural networks Subject to Input Saturation | 13Mar14 | Completed - Reject | 06Dec13 | 17Jan14 | 16Jan14 | 41 | | | | | |
| | | | | | This paper deals with the problem of anti-windup design for a class of state saturation systems subject to time-varying delayed cellular neural networks and input saturation. By introducing the saturation degree function and applying the convex hull theory to handle the saturated terms, we firstly put forward a stabilization controller for the time-varying delayed system at the absence of input saturation via LMI formulation according to Lyapunov-Krasovskii theorem. Then the anti-windup gain matrix is derived to compensate for the difference between the constrained and unconstrained systems in the presence of input saturation. Further, the enlargement to the basin of attraction under input saturation is formulated, and the corresponding optimization problem with LMI constraints is given. Finally, numerical examples are included to illustrate the effectiveness of the proposed design technique. | | | | | | | | | | |

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| # of reviews | time (hr) | math length (SCII kbytes) | Total length (SCII kbytes) | MyReviewer # | Manuscript Number | Article Type | Article Title | Status Date | Current Status | Final Disposition | Date Review | | | | Editor's Name | | |
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| 1 | 11 | 11 | 11 | 0 | 0 | 1 | Special Issue: Big Social | 27May14 | Completed - Accept | Accept | 03Sep13 | 03Sep13 | 15Oct13 | 13Oct13 | 40 | | |
| | | | | | 3-00233 | An Incremental Community Detection Method for Social Tagging Systems Using Locality-Sensitive Hashing | More and more users keep interacting, sharing, and collaborating through social networks. Unprecedented growth in social tagging systems is making accessible the perspectives of millions of unstructured user-generated content. From such a large amount of unstructured data, distilling the communities with users having common interests and tracking variations of users' interests in time are really important to researchers such as opinion mining, trend prediction and personalized services. However, this is an extremely difficult task as the highly dynamic characteristics of data. And current community detection methods are time-consuming and hard to process the data in real-time. As the unstructured data is dynamic in nature and could reflect changes of users' activities over time, it is possible to detect temporal group formation and users' transient interests. In this paper, the dynamic unstructured data is modeled by social data stream and an incremental scalable community detection method is proposed based on locality-sensitive hash. Moreover, not only words used by users but also the latent interactions among users are incorporated into the community detection method. In the experiments, users' social dynamic behaviors are analyzed firstly. Then, the proposed method is compared with state-of-the-art methods and the results demonstrate that it could detect communities efficiently and accurately. | | | | | | | | | | |
| 1 | | | | | 3 | Article | Synchronization control of memristor-based recurrent neural networks with perturbations | 22Jan14 | Completed - Accept | Accept | 03Jul13 | 02Jul13 | 13Aug13 | 01Aug13 | 30 | | |
| | | | | | 3-00187 | | | | | | | | | | | | |
| 1 | | | | | 3 | Article | Correcting and Combining Time Series Forecasters | 28Oct13 | Completed - Accept | Accept | 20Mar13 | 24Mar13 | 03May13 | 28Apr13 | 35 | | |
| | | | | | 3-00067 | | | | | | | | | | | | |
| 1 | | | | | 1 | Article | Characterization of Seizure-Like Events Recorded in vivo in a Mouse Model of Rett Syndrome | 06May13 | Completed - Accept | Accept | 26Feb13 | 26Feb13 | 09Apr13 | 07Apr13 | 40 | | |
| | | | | | 3-00061 | | | | | | | | | | | | |
| | | | | | | | The aim of this paper was to analyze continuous 24 hour cortical LFP recordings from MeCP2-deficient mice to extract distributions of SLE and inter-SLE durations; and infer the mechanisms involved in seizure generation in an in vivo mouse model of Rett syndrome. In summary, we have shown the SLEs from the MeCP2-deficient mouse model exhibits similar characteristics to absence seizures. As a result it is difficult to predict when the seizures will occur, but once they do, it may be possible to reduce their durations. These findings highlight the importance of early detection of seizure state initiation. To improve detection, future work will use multiple recording electrodes to evaluate interaction across various brain regions in SLE initiation. In addition, using a higher sampling rate would allow for studying high frequency oscillations (HFOs), which have been associated with seizure initiation (Zijlmans, et al., 2012). Early detection along with treatments aimed at counteracting the disruption in delta rhythm provide a starting point for developing treatments for a condition lacking treatment options. | | | | | | | | | | |