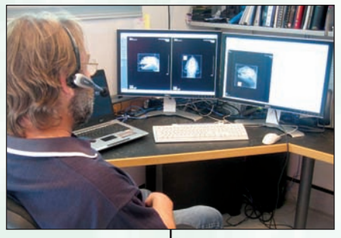
Issue 11. July 2008

The Next Step

Veterinary **Specialist** Group EXPERTISE • TECHNOLOGY • COMPASSION

Speak To Me - Speech Recognition Software - by Chris Warman



Since 2000, I have been using speech recognition software almost exclusively for clinical record keeping and producing referral reports. Is this program accurate? Is this technology worthwhile in veterinary practice? The short answer to both questions is definitely yes.

I started with speech recognition using Dragon NaturallySpeaking Professional Medical Version 4 speech recognition software and now I am currently using Version 9.5. The software program has developed markedly since those early days. The software not only allows the user to dictate text directly into many software programs but also allows the user to use voice activated commands to navigate through programs on their desktop. Third party software programs can be purchased to increase the number of voice activated commands available to the user. Voice macros are easily created, so that commonly repeated text can be transcribed with a simple voice command.

The latest version of the software has a very sophisticated speech recognition engine. The advanced speech recognition engine is only available in the professional version of Dragon NaturallySpeaking. The speech recognition engine is not the same as that used for the Dragon NaturallySpeaking Standard or Dragon NaturallySpeaking Preferred versions of the software, which are available in retail computer software outlet stores. The software is relatively expensive, at approximately $3000. On the plus side however, multiple users can create their own voice profile on a single workstation and it is also possible to load a single license on to a second computer. The software can also be purchased in a version that is able to be loaded onto a server for multi-user access.

I use this program in a relatively noisy clinical environment and consistently maintain accuracy in the 96-97% range when free dictating. I find that if I read text to the program, this accuracy increases to approximately 99%. Many users in forum sites report 100% accuracy when reading text to the program in a quiet environment and using a microphone with excellent noise suppression capabilities.

An extensive medical dictionary is loaded within Dragon NaturallySpeaking Medical. Medical terminology recognition is excellent. The spelling is always right, a feature very handy in my situation, considering my expertise with spelling! I would strongly advocate the software to veterinarians who frequently produce written reports. This program would certainly be a worthwhile option for all specialist veterinarians producing referral letters, pathologists, lecturers and veterinarians who perform a great deal of offsite work, but need to generate a report upon returning to the office. It is possible to dictate into a portable digital recording device when away from the computer and then to transcribe a voice wave file directly into written text through the program when returning to the office.

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More to the Crew Than Medicine and Surgery

Introducing "Femur" - the VSG band

The idea of a VSG band had been around for years. Mike Coleman was known to be a vocalist and guitarist of considerable talent with many years of performance experience behind him. Alex Walker was also no mean drummer and had played in groups previously. However with little demand for two piece bands in Auckland, the idea lay dormant for quite some time!

Leading up to 2006, Mike's attention was focused on passing his Australian College fellowship exams. Once this was achieved however, thoughts of a VSG band once again began to emerge. The idea was floated with Darren Fry over a couple of beers after exams in the Gold Coast. The good news was that Darren held a lifelong ambition to be a bassist in a band. The bad news was that his only previous musical experience had been playing guitar in a very bad heavy rock band some 20 years previously! Undaunted by this, plans proceeded. Darren began to learn a few basic skills, eventually buying his own bass guitar and the band had begun.

As news began to filter through the practice, other closet musicians began to emerge. Nurses Sharon Lim and Sharyn van Aalst revealed their vocal talents and now the band had a second lead vocalist and two backing singers. After the initial suggestions for band names (Mike and the Sharons, Mike and the Colemanoscopies, Rage against the Ultrasound Machine) were rejected, Mike's suggestion of the snappier sounding "Femur" was adopted.

Femur's first public performance was at the VSG Christmas function at the end of 2006 where the band managed to pull off a set consisting almost entirely of three chord songs. Gradually as the quality of the music improved further, slightly more accomplished public performances then followed. Femur was given another dimension by the addition of medicine resident Danielle Bowles. As a classically trained pianist, she was able to add more depth and finesse to the overall sound. Femur is now an enjoyable hobby for several members of the practice.

Regular rehearsals and occasional public performances provide a welcome diversion from the rigors of referral practice. As far as we know, Femur is the only band made up entirely of staff of a veterinary practice in the world. As an aside, any future applicants for staff positions at VSG might like to know that we are currently looking for a second guitarist!

Staff Focus - Jessica (Jess) Lee

Jess is one of the surgery nursing team.

How long have you worked at VSG?
Just over three years now.

What do you enjoy about working at VSG?
The hands on involvement in patient care with all the practical aspects such as catheters, epidurals and suturing. The biggest bonus is working with a fantastic group of people (including the sometimes infuriating surgeons).

What do you enjoy doing on the weekends?
Relaxing and unwinding, watching DVD's, catching up with family and friends and doing minor renovations around the house.

Tell me about your family
I have two sisters. The youngest is in Australia with her son Jamie and my dad. My husband and I have just brought a house next to my older sister and mum.

What inspired you to become a veterinary nurse?
The constant flow of foster animals we had as I grew up.

How many animals do you have at home?
At present I have Ella-Bean the Rottie, Peggy-Sue the Staffie x Bulldog, also a Toy Poodle called Justi. I also have 5 DSH cats; Mouse, Thomas, Poppet, Gizmo, and a stray mother cat.

What is your favourite meal?
Roast lamb with fresh vegetables.

And your favourite TV programme?
"Lost" and "House".

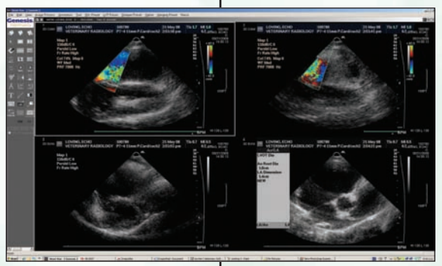
What is your favourite holiday destination?
Fiji at present but we are off to Samoa in August so it could change.

If you won Lotto tomorrow, what would you spend the money on?
Buy a lifestyle block and try and be as self sufficient as possible, plus lots of domestic and international travel.

Digital Image Storage - by Chris Warman

If the recent workshops in diagnostic ultrasound, held at Massey University in 2007, are anything to go by, there is growing interest within the profession in this imaging modality. With the expected increased use of diagnostic ultrasound, there will be a need to record and archive images generated from these future studies. There will also be a need to share these images throughout the clinic/hospital environment, with in-house clinicians, clients and potentially, other veterinarians. Traditionally with film-screen radiology, the radiograph is in itself the record of the imaging process. This is not the case in ultrasound. The record of the study is only temporarily frozen on the monitor of the ultrasound machine. There will be a need to record this frozen image to some form of permanent record, which can be both archived and reviewed at a later date.

Many modern veterinary ultrasound machines and ex-hospital machines will have a dedicated archive device, a hard drive, located within the machine to store images. Ultimately however the storage capacity of these devices becomes exhausted and there comes a time when it is necessary to delete older images in order to store current images. Unless these older images are somehow copied, they will be lost forever.



We have a number of options when recording and archiving a diagnostic image for posterity. We can record the image with hardcopy devices such as multiformat cameras, printers, VCR or to video DVD. Alternatively we can transfer the images as soft copy, to another computer hard drive, CD or DVD. The most practicable solution for storage and sharing of images, particularly in a typical practice environment, is to record these images as soft copy to a networked computer's hard drive.

With computers being so inexpensive, an adequate dedicated image server is the best option for image storage and distribution. The machine should ideally be at least in a RAID1 configuration, so there is inherent redundancy in case of hard drive failure. A computer with paired 250-GB drives would be more than adequate for the majority of practices for many years. Most ex-hospital machines and many newer small veterinary units will be capable of networking with a dedicated image server. The majority of ex-hospital machines will be able to produce images in the Digital Imaging Communications in Medicine format (DICOM), whilst DICOM licenses can be acquired for many new veterinary machines.

If your machinery is DICOM capable, the easiest option for both image distribution and archiving is a picture archiving and communication system (PACS). A commercial PACS system which would be suitable for veterinary practice, can range in cost from approximately $5,000-$20,000. I am currently having discussions with a company to try to produce a simple Veterinary PACS system for less than $5,000. I will keep you posted with progress on this front in future articles. For the technically minded however, or practitioner who has excellent IT support staff, it is also possible to obtain free PACS software from the Internet through medical imaging sites and construct your own PACS environment. To those of us who have only a smattering of computer knowledge, and do not want to spend a small fortune on a PACS, it is also possible to access free Internet software to construct a simple imaging workstation that is capable of being used for review and long-term storage of diagnostic images. The most commonly utilized open source free software programs for this purpose are, KPACS for the PC and a program called Osirex for the MAC computer.

Another solution for the storage and distribution of the images, provided with some equipment, is to copy the images via an inbuilt CD or DVD burner. The images are generally copied in either JPEG or bitmap format, which can be opened on a host computer with any standard picture viewing software. It is questionable whether medical images however should be permanently stored in the above picture formats, as it is possible to manipulate these images post acquisition, without any evidence that image manipulation has occurred. With images in DICOM format, all post acquisition image manipulation is recorded. From the medicolegal point of view it is important to be able to determine whether post acquisition image manipulation has occurred. CD and DVDs are good for long term image storage, but are rather cumbersome when it comes to image sharing in the hospital/clinic environment.

For a practitioner who has older machinery which does not contain a CD burner and is not capable of being networked, there may be a solution if the machine has video out capability. It is possible to connect to a breakout device, such as a MediCap unit that can record the images. The MediCap device can be upgraded to record in DICOM format.

And finally, a novel approach by machine manufacturer Esaote. In addition to being able to network many of its modern machines, Esaote also provide the opportunity to copy the images to a flash stick. The flash stick can then be placed in the USB port of any computer and the images can be viewed using Esaote's proprietary imaging software program, which is downloaded upon first insertion of the flash stick into the host computer. It is important to realize however that the images are in this manufacturer's own proprietary format and that any reviewing clinician must have downloaded the viewer software to their own computer in order to view the images.

Sunny Isles Miami - Clinically Proven - by Alex Walker

I had the pleasure to attend the **Hill's Global Mobility Symposium** in Miami recently. It is a long way to go for a one and a half day conference but it was the type of symposium I would never have attended unless invited. There were attendees from all over the world and over 90% were specialists in internal medicine, surgery and nutrition. As you can imagine, the discussions were broad. As a surgeon, nutrition is not my favourite meal but the information presented was incredibly interesting and the quality of research very high. Among the topics presented a few caught my particular interest:

1. The depth of research into the effect of omega 3 essential fatty acid (EFA) on inflammation (we should all be taking it!!).
2. Feline osteoarthritis - we don't know much.
3. Obesity as a chronic inflammatory disease.
4. Nutrigenomics and the role of this technology in the future.

Many of you would have heard Pru (Dr Galloway) talk on nutrigenomics and Dr Nick Cave's excellent presentation on obesity at the NZVA Conference last year in Christchurch. I will try to give you some of the take home messages from all of these talks.

1. Omega 3s. We probably all know the science behind basic fatty acid metabolism and its role in inflammation. For me it was there in my brain but let's just say, not in crisp focus. The guts of it is that after a lot of biochemistry, our bodies produce arachidonic acid (AA) or eicopentanoic acid (EPA) which act as precursors for the synthesis of eicosanoids, a significant group of immunoregulatory molecules that influence mediators of inflammation. ***The eicosanoids produced from AA appear to be more proinflammatory than those produced by EPA. The good news is that EPA competes with AA in the substrate pool so animals fed food high in EPA (marine fish oil) have downregulated inflammatory activity.***

Docosahexaenoic acid (DHA) is another EFA found in marine fish oil and is concentrated in neural tissue (CNS, neurons, retina). Recent research has shown that the resolution of inflammation is an active event which involves upregulation of specific proresolution circuits. Products derived from EPA and DHA have shown to have potent actions in the resolution of inflammation and may also have neuroprotective properties. These compounds have been termed resolvins and protectins. The discovery of resolvins and protectins may explain some of the beneficial actions of dietary supplementation of omega 3 in the clinical setting. The positive effect of omega-3-fatty acid on patients with osteoarthritis has been extensively researched and numerous studies were presented demonstrating this. There are many questions unanswered but the ***current recommendation as a reasonable starting point dosage is 50mg-250mg of total omega-3-fatty acid per kg of body weight per day. This seemed to be effective in a large number of studies.*** Not surprisingly Hill's j/d provides this level without further supplementation.

Take home - I came back to NZ and bought a big bottle of marine fish oil for me. A "lipid" expert in the audience commented that vegetable based omega-3 has to be converted to the marine form in the body, for effectiveness, and this is a low conversion rate (<10%) so always take the marine form.

2. Feline osteoarthritis (OA): Little is known about the clinical signs associated with feline OA so it can be difficult to assess but a recent study showed overt lameness was not a common clinical sign and that activities such as jumping up or down, height of the jump, general movement, "grumpiness" when being handled and seeking seclusion were signs that should be looked for. A study by Dr Duncan Lascelles of 100 cats selected from a pool of 1640 was presented. The cats were divided into four age groups and all examined radiographically (all joints and spine). Seventy three cats had DJD of one or more appendicular joint and 40% of owners considered their cats to have reduced ability to jump up or down. ***The authors found there was only a moderate overlap between joints that appeared clinically painful and those that had radiographic signs of DJD.*** This I found interesting because over the years it is a frequent occurrence in cats to identify a painful joint only to find no changes radiographically. The most commonly affected joints were the hip, elbow/tarsus, stifle, shoulder, carpus in order of decreasing incidence. No data was given relating to changes in synovial fluid in affected joints.

Sunny Isles Miami - Clinically Proven - continued

The author developed a very useful ***"Guidelines for a Feline Orthopaedic Examination".***

a. Be prepared to spend the required time for feline examinations and to continue the examination later if necessary.
b. Be calm; cats do not generally tolerate a rushed or stressful situation.
c. Use a room that is quiet, away from barking dogs and free of places where a cat can hide.
d. Use a soft surface that is not slippery.
e. Minimise restraint. Cats prefer continuous contact over relatively broad areas (i.e. not 'point' restraint).
f. Perform the examination in a comfortable position for the cat - e.g. standing, lying, or in the owner's arms.
g. Have the owner present during the examination.
h. Keep your hands in continuous contact with the cat.
i. Include every joint and the axial skeleton when evaluating for pain on manipulation and functional abnormalities.
j. Cats often appear to resent extension of joints more than dogs and will often react adversely to extension of the elbow and stifle. This should not be overinterpreted.

Dr John Innes from the University of Liverpool then presented some lovely work on establishing an in vitro model for feline articular cartilage degradation showing that a combination of oncostatin M (OSM) and interleukin 1β produced predictable release of glycosaminoglycans (GAG) and collagen. They also showed that EFAs affected the release of GAG and collagen and DHA appears to be the most effective EFA in ameliorating release of GAG and collagen and seemed to be an excellent candidate nutrient for nutritional support of feline cartilage (talk to Pru about Feline j/d!).

Take home - Cats are hard to examine so maybe I need to have more time to do it and be willing to try again later. Radiographs are important but a lot of false negatives can occur.

3. Obesity is a major topic in human health and the subject of extensive research. Fat is now officially the largest endocrine organ. Bad news - adipose is metabolically active and the only organ with unlimited growth potential at any stage of life. Although it is intuitive that obesity causes mechanical stress resulting in joint injury, the relationship with other diseases such as type 2 diabetes (T2DM) is less clear. Adipose secretes proteins called adipokines. One adipokine is called Adiponectin and is by far the most abundant hormone present in circulation (comprises about 0.01% of total plasma protein whereas all other hormones circulate at 1000 times lower concentration). ***Adiponectin is a unique adipokine because it is inversely related to obesity; all other adipokines have increased levels with increased obesity.*** Adiponectin increases insulin sensitivity and is thought to be a key link between obesity and T2DM. Many adipokines such as leptin, TNFα, IL-1β, IL-6, monocyte chemotactic protein-1, tumour necrosis factor -α, resistin, visfatin, etc, are involved in the inflammatory pathways. Obesity is now characterized as a chronic mild inflammatory condition with raised circulating levels of inflammatory markers and the expression and release of inflammation-related adipokines generally increases as adipose tissue expands. The release of these adipokines is thought to exacerbate local inflammatory conditions such as osteoarthritis adding to the mechanical insult. Clinical studies have shown dogs with OA that are only 10%-30% over ideal body weight show significant improvement in clinical signs and weight bearing when they achieve ideal body weight.

Take home message - I must try harder to get fatties to become skinnies. It invariably becomes the referring vet who needs to follow through with this. Detailed weight loss programs need to be formulated. (Also , I stopped eating pies for lunch).

4. Nutrigenomics - the effect of nutrients on gene expression; this was a great talk by Mitch Abrahamsen (vice president of research at Hill's). Mitch explained that from a single blood sample 40,000 data points (gene expressions) can be measured. Gene expression can be higher or lower compared with a control. This can be displayed in a "gene expression heat map" where downregulated genes are red and upregulated genes are blue. A lean dog has a more "red map" due to downregulation of the genes associated with fat accumulation. A study by Yamka in 2007 identified a gene expression pattern associated with obesity in Beagles. The gene expression heat map of obese dogs has a characteristic "blue" pattern. When obese Beagles were fed a diet (Hill's Prescription r/d) they lost approx 41% of initial fat mass over four months which was accompanied by a shift from an obese to lean genomic profile. ***Interestingly some diets resulted in similar weight loss but were not accompanied by a shift to a lean genomic profile (gene expression heat map stayed blue) - in other words, the dogs lost weight but stayed "obese" according to their gene expression.*** It is postulated that this is why weight is rapidly gained after dieting because the gene expression for fat accumulation is still upregulated. Very interesting. Gene expression heat maps have also been established for dogs with osteoarthritis - Mitch said he can tell if a dog has OA just by looking at the genomic profile.

Take home - review genetics notes from Massey and start retraining before all disease can be diagnosed by a single blood sample. Any openings for an ageing drummer?

Thank you Hill's for a great conference.

For The Medicine Geeks - Test Your Knowledge - by Mike Coleman

1. Which of the following drugs would be best to use first for rapid effective pain relief in acute pancreatitis in a dog?
a. Meloxicam.
b. A lidocaine constant rate infusion.
c. A fentanyl patch.
d. IV morphine.

2. What is the reported median disease free interval for cats with lymphocytic (low grade) intestinal lymphoma that achieve complete remission with chemotherapy treatment?
a. 3 months
b. 6 months
c. 12 months
d. 22 months

3. Which of the following statements is true?
a. The presence of a sinus arrhythmia in a coughing dog indicates that an underlying cardiac cause of the cough is unlikely.
b. Coughing in cats is almost always due to airway disease.
c. Measurement of BNP (brain natriuretic peptide) may help differentiate between cardiac disease and respiratory disease in a coughing dog.
d. All of the above.

4. Which of the following statements regarding atrial fibrillation (AF) is false?
a. AF in the dog occurs most commonly secondary to under lying dilated cardiomyopathy or mitral valve disease.
b. AF is one of the most common rhythm abnormalities seen in dogs.
c. The AF heart rhythm is rapid and regular.
d. AF is a poor prognostic sign in cats.

5. Which of the following tests is least indicated in the diagnostic workup for underlying causes of megaoesophagus in the dog?
a. Acetylcholine receptor antibody test.
b. ACTH stimulation test.
c. Endoscopic examination of the oesophagus.
d. Fasting blood glucose level.

6. The presenting clinical signs in dogs with laryngeal paralysis can include:
a. Stridor.
b. Exercise intolerance.
c. Loss or change of bark.
d. All of the above.

7. The best fluid therapy to administer to a cat with severe ketoacidotic diabetes mellitus and unknown electrolyte status is:
a. 0.9 % sodium chloride.
b. Lactated Ringers.
c. 0.9% sodium chloride with 20 mmol/L of potassium chloride and 20 mmol/L of potassium phosphate.
d. 0.9% sodium chloride with 20 mmol/L of potassium chloride.

8. Which of the following statements regarding idiopathic epilepsy in dogs is true?
a. Seizures almost always start in dogs under 5 years of age.
b. Oral diazepam has been shown to be a good monotherapy.
c. Mild neurologic deficits between seizures are consistent with idiopathic epilepsy.
d. Idiopathic epilepsy can be definitely diagnosed with an MRI scan.

9. The best treatment for chronic pancreatitis in cats is:
a. Prednisone and a low fat diet.
b. Pancreatic enzyme supplementation.
c. Withholding food for 48 hours.
d. I don't know what the best treatment for chronic pancreatitis in cats is.

10. Clinical signs associated with warfarin rodenticide toxicity can include:
a. Haematuria.
b. Lameness.
c. Coughing.
d. All of the above.

Please forward your answers to; office@vsg.co.nz by 30/7/08
Please ensure you include your name, and clinic.
All entries with the highest number correct will be entered into a draw to win a prize option of either;
An internal medicine text book by Nelson & Couto, or a bottle of Bollinger.

Congratulations to Dr Andrea Wong of Franklin Vet Services, Papakura, Auckland, who won the prize for the Surgery Quiz in our April newsletter.
Andrea has chosen as her prize the text book by Dr. Terry Fossum.